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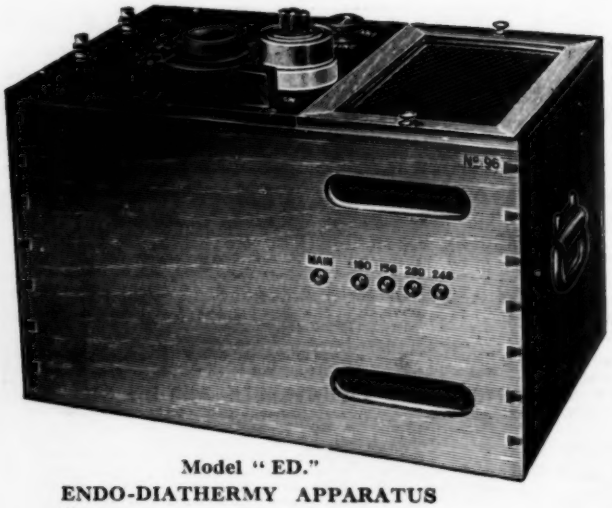

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BY CHARLES A. PANNETT, M.D. LOND., F.R.C.S. ENG.

SURGEON TO ST. MARY'S HOSPITAL; PROFESSOR OF SURGERY IN THE UNIVERSITY OF LONDON

SPINAL anæsthesia lacks the absolute dependability of inhalation narcosis. Two uncertainties dominate the situation: the extent of the anæsthetic field produced, and the magnitude of the fall of blood pressure. This paper is concerned with the problems of the control of the upward spread of the anæsthetic agent and the maintenance of an adequate blood-supply to the brain.

Despite the recommendation of le Filliâtre and Koster that this method should be employed for operations upon the head and neck, and the demonstration in animals that the direct application of novocain to the floor of the fourth ventricle may be quite harmless,[1] an observation strikingly confirmed by other observers,[2 3] few surgeons can regard an anæsthesia which ascends higher than the clavicles as anything but perilous. Indeed it does not seem wise to aim at loss of sensation higher than the nipples, an anæsthesia which will allow any abdominal manipulation to be carried out painlessly except traction on the cardiac end of the stomach, the sensation felt in this case being due to sensory fibres in the vagus or dragging on the diaphragm supplied from the fourth cervical nerve. Though it is possible to obtain complete anæsthesia without respiratory paralysis both in man and animals, the exact conditions necessary for this, and the safeguards which must be observed, are not fully known and it is better, with our present knowledge, to avoid the risk of the anæsthetic spreading up above the middle of the dorsal region and thereby incurring the risk of paralysing the upper intercostal muscles and diaphragm.

Spread of an Intrathecal Injection

There are four means by which an injected substance may spread beyond the point of puncture of the thecal space. They are: (1) diffusion; (2) gravity; (3) volumetric displacement; (4) mechanical commotion.

Diffusion is so slow a process, a matter of weeks at least for it to be effective, that it can obviously

FIG. 1.—Diagram showing the flow of solutions as far as the dorsal region, with patient in the head-down position.

play no part and may therefore be eliminated. Before considering the other three factors it is pertinent to ask whether their influence may be affected by circulation of the cerebro-spinal fluid or by anæsthetic acquisitiveness or other property of the nervous tissue. There is no active circulation of cerebro-spinal fluid to be demonstrated in a laminectomised animal.[4] The cerebro-spinal fluid flows in a sluggish, almost imperceptible stream. A dye injected locally remains for long at the site of injection. But the conditions of the experiment are important. The dura must be intact, and a fairly extensive removal of laminæ, for observation, must be carried out.

Gravity.—There is not the slightest doubt, as Barker[5] so ably demonstrated, that gravity can play a quite important part in the movement of the injected drug. Because of its high specific gravity I recommended[4] in 1929 the use of a 10 per cent. solution of novocain. I still use it with very satisfactory results. With a patient in a slight head-down position a heavy solution will naturally flow to the cavity of the dorsal spine, as Fig. 1 shows, to a position which is quite high enough to abolish the pain impulses travelling along the splanchnic nerves. Yet experience makes it abundantly clear that gravity is not the sole and perhaps not the most important means of spread. Compliance with all the obvious conditions will not ensure the drug reaching the desired height, and, on the other hand, will not inevitably prevent the drug from travelling higher than the force of gravity would lead us to expect, while solutions of the same specific gravity as the cerebro-spinal fluid will spread with apparent ease, but not always with certainty. The passage of the anæsthetic solution in response to gravity may be checked possibly by the cord lying in contact with the posterior aspect of the dural sac. Anatomically, at about the twelfth dorsal vertebra, the spinal cord, from being in contact with the anterior wall of the spinal canal, passes backwards to lie on the posterior surface, where the strands of the cauda equina remain.[6] The injection is thus ordinarily made anterior to the cord and has to pass round it as it ascends. It also has to negotiate the obstructions offered by the ligamenta denticulata and the nerve-roots.

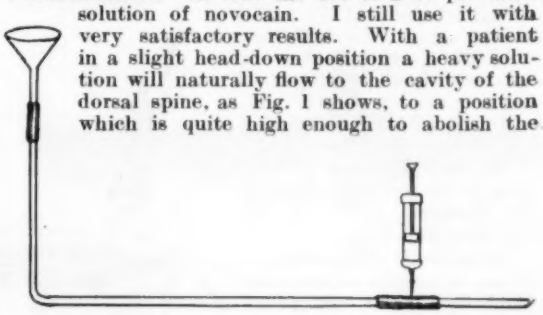

FIG. 2.—Apparatus demonstrating volumetric displacement.

Volumetric displacement.—This can best be explained by reference to a simple laboratory experiment which I described in a paper some time ago.[7] If an injection of dye is made in the apparatus filled with fluid shown in Fig. 2 it will be found that the dye will travel only towards the left where fluid can be displaced up the angled tube. Do these conditions apply to the human spinal canal? They would if: (1) the dural sac were inextensible, and (2) if the extradural intraspinal pressure were always less than the intrathecal pressure so that the dural sac in transverse section would assume its maximum area, that is, be a true circle. In the paper referred to I assumed these two conditions, for I had found that the dural sac was very tough in a specimen of cord and membranes which I excised intact, post mortem, and I accepted the statement of Heldt and Moloney[8] that the pressure outside the dural sac is very slight and indeed is a negative one. Subsequent dissection has led me to modify my views about the extensibility of the dural sac; it is not always strong and inelastic. Also, a little consideration will show that there cannot be a uniform pressure in the extradural intraspinal

interval, for this space is occupied by fatty tissue, veins, and arteries. It is impossible to measure the pressure within adipose tissue with the needle of a manometer. The pressure registered by Heldt and Moloney in their researches was most likely the venous pressure. Hence it does not follow, as I believed, that the injection of a volume of fluid sufficient to reach up to the mid-dorsal region is the secret of right disposal of the anæsthetic agent. Nevertheless, clinically a great measure of success follows the injection of 20 c.cm. of 1 per cent. novocain without withdrawal of cerebro-spinal fluid, and I have used it many times. This is the method employed by Howard Jones in his percaine injection.

Mechanical commotion.—When a lamina is removed from the spinal cord of an animal, or man for the matter of that, it is very striking to watch the pulsations in the extradural fatty tissue synchronous with the heart. When the spine is intact, since the bony wall is rigid, this pulsation must, with a wave-like movement, rhythmically compress the spinal theca. Cerebro-spinal fluid will perhaps be displaced upwards into the skull cavity; possibly, and more likely, one part of the sac is compressed whilst a neighbouring part is expanded. At first sight it does not seem clear that the movement would lead to spread of an injected fluid, but the following experiment makes it almost certain that it does. (Fig. 3.)

drawal of cerebro-spinal fluid, and the injection of much volume of liquid are all unnecessary, and should be discarded except perhaps in special circumstances. Simple injection of a small volume is sufficient, though we need not despise what aid we can obtain from the force of gravity.

There still remains the question as to which conditions are favourable to good spread of the anæsthetic solution and which betoken failure, but of this I cannot speak with confidence. When, however, the blood pressure is high and the cerebro-spinal pressure low, a not uncommon event, the spread of the anæsthetic always seems to be good; and in one patient in whom, by injection of 10 c.cm. of an innocuous solution into the theca, I raised the cerebro-spinal pressure from 10 cm. to 18 cm. of water, the subsequent injection of novocain did not spread upwards. Perhaps the spinal manometer can give us a clue to the likelihood of good upward spread.

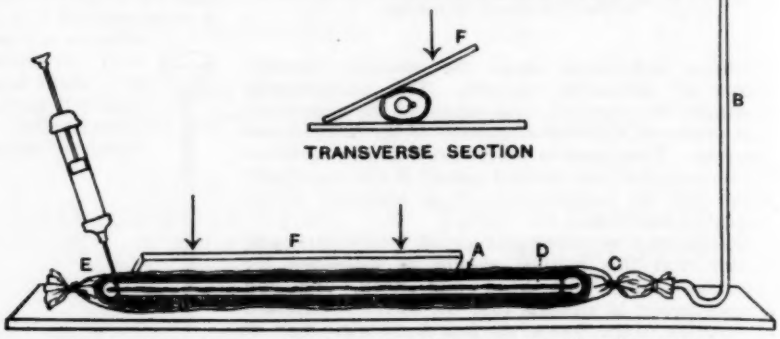

FIG. 3.—Apparatus demonstrating mechanical commotion (described in text).

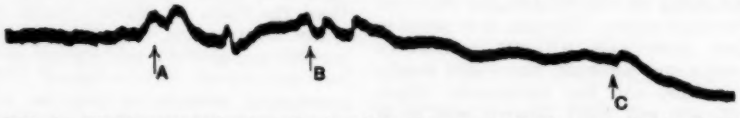

FIG. 4.—Blood-pressure tracing of cat under urethane anæsthesia. A, left splanchnics divided. B, right splanchnics divided. In each case rises of pressure on traction of nerves during division. Small ultimate fall of blood pressure. C, injection of 0·4 c.cm. of 5 per cent. novocain intrathecally. Note further fall of blood pressure.

(A) is a thin-walled rubber tube filled with water to a pressure of 10 cm. of water measured by manometer (B). The tube representing the dural sac was then closed by ligating it at (C). (D) is a solid glass rod representing the cord, along the whole length of which is stretched a piece of thick silk. An injection of 1 c.cm. of methylene-blue was then made at (E). After ten minutes the dye as shown by the staining of the silk, had spread, largely as the result of gravity, for 6 cm. from the site of injection. The same experiment was done with this difference, that light pulsations about 80 per minute were given by a piece of wood (F) arranged on a hinge attached along one of its sides. After this the dye had spread in the sac over the same period of time for no less than 23 cm.

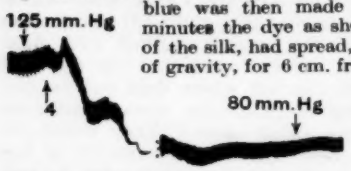

FIG. 5.—Typical fall of blood pressure on injecting at 4 0·2 c.cm. of 5 per cent. novocain intrathecally in the cat.

On repetition the result was always in the same direction, and came as a great surprise to me because, as I have said, I had already noted that after spinal exposure in a rabbit spread was extremely slow. When the bony wall is intact, however, physical conditions are quite different and I believe that this mechanical commotion is the most important factor in the spread of the anæsthetic. Barbotage, with-

There is no reason why mechanical commotion should not make the anæsthetic agent travel right up to the skull. The patient is protected from this by the neurotropic power of the nervous tissue which fixes the novocain, rendering the solution progressively weaker the further it ascends. This is why the height to which the anæsthetic ascends depends so much upon the dose administered, and why, below a certain concentration, an injection of novocain is ineffective.

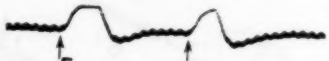

FIG. 6.—Same experiment as Fig. 5. Rise of blood pressure of 10–12 mm. Hg on raising lower part of cat at E and F.

The Fall of Blood Pressure

There is usually a fall of blood pressure after a spinal anæsthetic, the degree of which is impossible to foretell but seems to depend to some extent upon the height to which the anæsthesia ascends. The fall, which obviously brings elements of danger with it, has usually been ascribed to the blocking of the splanchnic nerves. But although the volume of the spleen and kidneys is increased after splanchnic section, the pale, contracted, bloodless condition of the intestines is familiar to every surgeon who operates under this form of anæsthesia. The

researches of Wright and Kremer [9] have shown that this fall is sometimes quite small and never very large. This experiment can easily be confirmed (Fig. 4). A typical fall of blood pressure after spinal

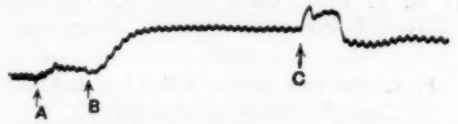

FIG. 7.—Same experiment as Fig. 5. Left vagus cut at A; right vagus cut at B; lower part of cat raised at C.

injection of novocain in a cat is shown in Fig. 5. After division of both splanchnics, which may produce a very small fall of pressure, a subsequent injection of novocain intrathecally always produces a very considerable drop (Fig. 4). We are therefore driven to conclude that it is the paralysis of vasomotor nerves to other parts of the body which plays the decisive rôle. The blood flow through muscular tissue has a very great range of variability. I suggest therefore that it is the dilatation of the vessels in the trunk and leg muscles which is an important factor in the drop of general blood pressure.

It is only right to state that another view has been put forward to account for the fall in blood pressure. Severs and Waters [10] attribute it specially to loss of inspiratory suction into the heart. The flow to the heart can be increased by raising the

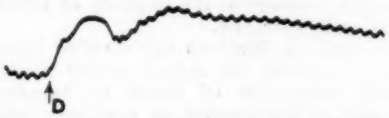

FIG. 8.—Same experiment as Fig. 5. Still further rise of 30 mm. Hg on stimulating central end of left vagus after double vagotomy.

lower part of the body, and this will raise the blood pressure, as is demonstrated in Fig. 6. This passive reserve response is important to bear in mind, but the Trendelenburg position is not really the best way of utilising it. Lowering the head too much will impede the return flow of blood from brain to heart. The logical way of utilising this knowledge is to raise slightly the recumbent abdomen and limbs above the level of the heart.

That there is still more capacity for active response in the raising of the blood pressure in spinal anæsthesia is well demonstrated by Figs. 7 and 8, which are a continuation of the same experiment. Double vagotomy, by increasing cardiac action, causes very

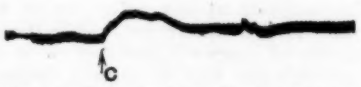

FIG. 9.—Blood-pressure tracing of cat. Pressure fell from 140 mm. Hg to 100 mm. Hg on intrathecal injection of novocain. Faradic stimulation of ear at C.

considerable elevation of pressure, an elevation which is again increased by raising the lower part of the animal. What is yet more remarkable is the further rise of 30 mm. Hg resulting from the stimulation of the central end of the left vagus. This result suggested the possible efficacy of an injection of atropine as a remedial measure. I have not, however, in the cat (in one experiment) obtained any experimental support for this and cannot recommend it. Some increase in blood pressure is still obtainable under spinal anæsthesia by the stimulation of sensory nerves whose conduction is unaffected. This is shown in Fig. 9, the effect of faradisation of the ear. In Figs. 10 and 11 we see the response to stimulation of other afferent nerves, and Fig. 11 also demonstrates how, under urethane anæsthesia (under which all these experiments were done), it can be demonstrated that the lower part of the body is under the influence of the spinal anæsthetic. No response whatever is obtained from stimulation of the sciatic. These two

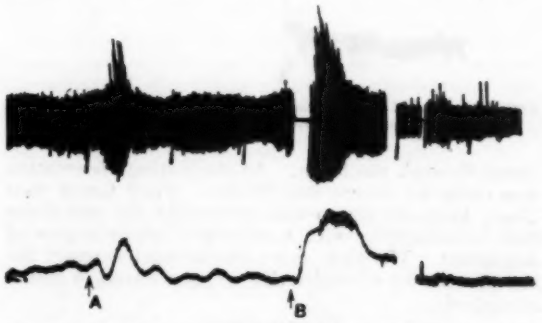

FIG. 10.—Blood-pressure and respiratory tracings of rabbit after intrathecal injection of novocain. Primary fall of blood pressure 50 mm. Hg A, stimulation of brachial plexus; B, stimulation of nasal mucosa.

tracings also show that an increase in the respiratory excursions accompanies the stimulation of afferent nerves. How far this in itself, by its suction effect, is responsible I am unable to say. The great response from the nasal mucosa led me to try the experiment of making a patient under a spinal anæsthetic inhale ammonia. It raised his blood pressure 12 mm. of Hg, and he asserted that it made him feel more comfortable.

The use of ephedrine for maintaining the blood pressure is recommended by some anæsthetists and condemned by others. Most conflicting accounts

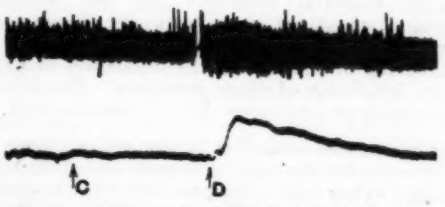

FIG. 11.—Same experiment as Fig. 10. Stimulation of sciatic at C produces no change; stimulation of nasal mucosa at D causes a rise.

of its effects are given. That it can, in the experimental animal, raise the blood pressure above its original level is demonstrated by the tracing in Fig. 12. Clinically I must confess to finding it very unreliable, and I am not convinced of the wisdom of its use. We must always remember that our primary object is not the raising of the blood pressure but the maintenance of an adequate supply of blood to the brain. Physiologists are abandoning the view that the vessels of the brain have no sympathetic vasomotor supply. Especially has this subject been elucidated by Forbes, Wolff, and Cobb.[11 12] According to them, stimulation of the peripheral end of the sympathetic will cause the pial vessels to constrict, while stimulation of the central end of the vagus will cause them to dilate. Adrenaline injected into the circulation also caused

a constriction. It is therefore possible that the injection of ephedrine, by eliminating the natural reflexes owing to its peripheral action, might lead to a diminution rather than an increase in the flow of

FIG. 12.—Rise of blood pressure in cat under spinal anæsthesia on injecting 10 mg. ephedrine intravenously at B.

blood through the brain. An interesting observation was made by Severs and Waters. They found that blood pressure supported artificially by ephedrine falls immediately, with a relatively slight degree of anoxæmia. We thus get experimental support for the practice of administering oxygen during a spinal anæsthesia.

Conclusions

(1) The distribution of an anæsthetic agent injected into the spinal canal is largely influenced by the pulsation of the extradural spinal vessels.

(2) A concentrated solution of drug is advisable because gravity can assist in its distribution and the height to which the anæsthesia will spread depends upon the strength of the solution.

(3) The fall of blood pressure in spinal anæsthesia is due largely to dilatation of vessels in the muscles of the affected area of the body.

(4) The body can respond to the stimulation of unblocked sensory nerves by raising the blood pressure.

(5) The respiratory excursion is probably an important factor in the maintenance of an adequate supply of blood to the brain.

(6) As remedial measures for the circulatory depression of spinal anæsthesia are recommended the raising of the lower part of the body, but not the lowering of the head; the inhalation of oxygen and the inhalation of dilute ammonia. The injection of ephedrine or adrenaline is not recommended.

The researches embodied in the above paper were carried out in the inoculation department of St. Mary's Hospital. They were made possible by the hospitality offered by Sir Almroth Wright, to whom I offer my most grateful thanks, as also to Dr. John Freeman for permission to conduct the experiments in his own laboratory.

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BUCCAL CANCER AND ITS TREATMENT BY RADIUM

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THIS paper embodies our experience with the use of radium in the mouth over a period of seven years, and we hope that it may prove of value to others dealing with the disease. The subject is dealt with under three heads: (*a*) some physical aspects of radium therapy, (*b*) clinical details of treatment, and (*c*) results.

Physical Aspects of Radium Therapy

UNIT OF DOSAGE

Milligramme-hour.—This is a unit of dosage very largely used; it has no real meaning in radiotherapy, since it gives no indication of the dose applied to any particular tissue or tumour. The unit indicates the quantity of radium used and the time.

Millicurie destroyed.—This unit puts the previous one on a slightly more scientific basis in which the radio-active changes act as their own clock. It gives no indication of the distribution of the dosage and is only a measure of the quantity of active agent employed and destroyed.

Energy unit.—J. Murdoch has adopted Dauvillier's proposal to express the actual energy absorbed in one cubic centimetre of tissue or tumour. The dosage unit is represented as ergs/cm³, while the intensity unit is expressed as ergs/cm³-hour. From many points of view this is an ideal unit, but so far no practical method of measuring it has been devised.

"*r unit.*"—This is the international unit of X radiation; it is based upon ionometric observations and is defined as the amount of X radiation (falling on one cubic centimetre of standard air) which separates one electrostatic unit of quantity of electricity under certain conditions of measurement.

Intensity unit.—None of the above units is convenient for calculating the intensity of radiation in the neighbourhood of needles and applicators. The natural method is to consider the intensity of radiation at one centimetre from a point source of 1 mg. of radium. Such a unit can be converted into "energy units" or "r units" by making the necessary experimental measurements, but is quite independent of the accuracy of such experimental work. The radiation at any point can be found by applying the "inverse square law," while the radiation from a number of sources is assumed to be additive. In order to limit the unit to gamma radiation it is assumed that the radium is screened by 0·5 mm. of platinum. For purposes of convenience of calculation such a unit is termed the gamma unit, while the unit of dosage becomes the gamma-hour.

LETHAL DOSE

According to Souttar the lethal dose for sensitive cancer cells in vivo is one millicurie at 0·5 cm. distance; this is equivalent to 4 × 133·3 mg.-hours at 1 cm. distance, or 533 γ-hours. On the other hand Spear gives the lethal dose (continuous) in vitro as—

300 mg. of radium at 0·5 cm. distance for six hours, or
1200 " " " 1 " " " " "

which is equivalent to 7200 γ-hours. According

to the same author, by suitably splitting the dose into a series of short doses the total lethal dose in vitro is reduced to 1200 γ-hours.

INTERSTITIAL IRRADIATION

The interstitial irradiation of a tongue tumour is carried out by placing 1 mg. needles uniformly round the growth at a distance of 1 cm. from it.

Considering a sphere, the periphery of which extends 1 cm. beyond the tumour, the number of needles to be inserted is obtained by squaring the diameter of the sphere and dividing by two. This method has given good results over a period of ten years. The intensity at the centre of the tumour is calculated by applying the "inverse square law." Neglecting absorption in the tissue, each needle produces an intensity of $\frac{1}{R^2}$, where R is the radius of the sphere. As there are $2 \times R^2$ needles the total intensity at the centre is $\frac{2R^2}{R^2}$ or 2 γ-units and is thus independent of the size of the sphere.

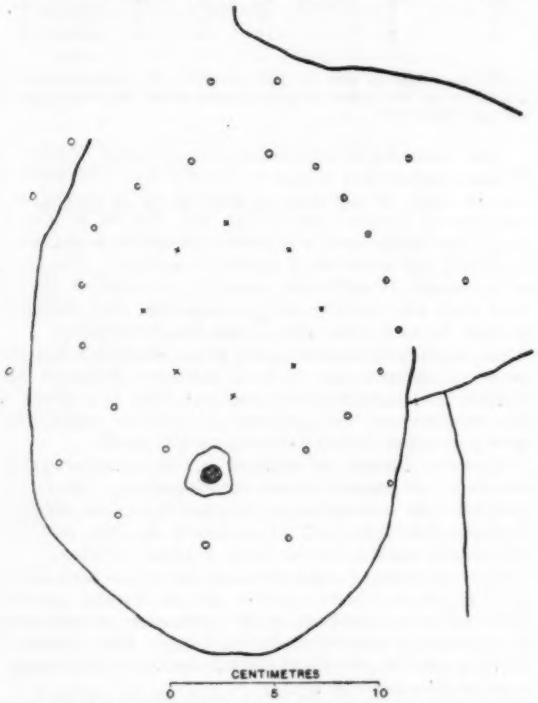

FIG. 1.—The arrangement of the radium needles for the irradiation of a typical breast tumour is shown. The crosses represent the punctures due to 2 mg. needles, while the circles represent the punctures due to 3 mg. needles.

All tumours do not lend themselves to such simple treatment; in breast cases, for instance, it is preferable to place the needles on the peripheries of a number of spheres in order to obtain a more even irradiation. Fig. 1 indicates the arrangement of the needles, as shown by the skin punctures, in a typical breast tumour. The figure does not show the precise positions of the needles on account of the curvature of the breast. Actually eight 2 mg. needles (44 mm. long) and twenty-eight 3 mg. needles (60 mm. long) are disposed on three concentric spheres having radii of 4, 8, and 12 cm. respectively and having their centres coincident with the centre of the tumour. The radium is arranged so that the smallest sphere produces an intensity of 1 at the centre, the intermediate one produces $\frac{3}{4}\gamma$ and the largest sphere produces an intensity of $\frac{1}{4}\gamma$ at the centre, the effect of absorption being neglected in all cases. It follows that the quantity of radium required to produce this result is $(4)^2$, $\frac{3}{4} \times (8)^2$ and $\frac{1}{4} \times (12)^2$ mg., respectively. Table I. indicates the arrangement:—

TABLE I

Radius of sphere.	Quantity of radium.	Needles employed.
4 cm.	16 mg.	Eight 2-mg.
8 ,,	48 ,,	Sixteen 3-mg.
12 ,,	36 ,,	Twelve 3-mg.

ABSORPTION

In order to compare the intensity produced in a tongue tumour with that produced in a breast tumour the effect of absorption must be considered. This is the subject of a special investigation, but preliminary results indicate that the following (Table II.) can be taken as approximately correct:—

TABLE II

A. = Radius of sphere on which radium is placed.
B. = Percentage of calculated intensity at centre of sphere.

A.	B.	A.	B.
2 cm.	93	8 cm.	75
4 ,,	86	10 ,,	70
6 ,,	80	12 ,,	65

Applying these corrections to a typical tongue case in which the radium is placed on a sphere of 2 cm. radius, the intensity at the centre is $2 \times 0{\cdot}93 = 1{\cdot}86\ \gamma$. As the optimum reaction is obtained in about 200 hours, the dose received at the centre is 372 γ-hours. In the case of the breast tumour quoted the effect is as follows (Table III.):—

TABLE III

Radius of sphere.	Calculated intensity at centre.	Corrected intensity.
4 cm.	1 γ	0·86 γ
8 ,,	$\frac{3}{4}\gamma$	0·54 γ
12 ,,	$\frac{1}{4}\gamma$	0·16 γ
Total		1·56 γ

In this case the radium was allowed to remain in position for 231 hours, so that the dose received at the centre of the tumour was 360 γ-hours, which is of the same order as that received by a typical tongue tumour.

EXTERNAL IRRADIATION

Screenage.—It is probable that, within limits, increasing the screenage of the radium used in gamma-ray applicators improves the efficiency, and the equivalent of 1 mm. of platinum has been adopted as the total screenage for such applicators.

Thickness.—The greater the thickness of the applicator, or the distance between the radium and the skin, the greater is the ratio between the tumour and the skin doses. As a compromise between efficiency and convenience a thickness of 3 cm. has been adopted.

Arrangement of radium.—The radium is arranged on an applicator to give uniform irradiation over the skin; this may be done in a number of ways. In the case of a flat circular applicator the distribution of the radium on concentric circles suggests itself as one of the simplest methods. The intensity produced at any point due to the uniform arrangement of radium on a circle is given by the following formula:—

$$\text{Intensity} = \frac{\text{Milligrammes of radium}}{\left[(r^2+d^2+a^2+2ra)\,(r^2+d^2+a^2-2ra)\right]^{\frac{1}{2}}}$$

where r = radius of circle on which radium is distributed.
d = distance from plane of circle.
a = distance of point from the central axis.

Fig. 2 shows a series of curves obtained by the use of this formula. Each curve represents the intensity variation in the plane of the skin—i.e., d=3 cm. The intensities are plotted against radial distance from the central axis. For convenience these curves are drawn so that the maximum intensity is unity, but this is not essential. They relate to circles having radii ranging from zero (corresponding to a point source of radium) to 15 cm. In the Figure the curves are marked as follows:—

X	The radium is placed	at a point source.
A		on a circle 4 cm. radius.
B		" " 6 " "
C		" " 8 " "
D		" " 10 " "
E		" " 12 " "
F		" " 15 " "

Circular applicators are built up by placing a suitable quantity of radium at the centre and also equally distributing it on one or more of the above circles, the object being to obtain a uniform intensity in the plane of the skin. For convenience of calculation an intensity of 1 γ unit is aimed at and an accuracy of $\pm$ 5 per cent. is considered satisfactory. The method is to assume an intensity of 1 γ at a number of points on the radius of the applicator. One of these points will always be at the centre of the applicator and the number of other points taken will correspond to the number of circles on which it is proposed to place radium. The position of these points is chosen so that together with the central point they will represent equal areas. This condition is satisfied at the following distances from the centre:—

For—	and the centre	
1 point		
2 points		$\sqrt{3/4}r$
3 "		$\sqrt{5/6}r$ $\sqrt{3/6}r$
4 "		$\sqrt{7/8}r$ $\sqrt{5/8}r$ $\sqrt{3/8}r$
		$\sqrt{9/10}r$ $\sqrt{7/10}r$ $\sqrt{5/10}r$ $\sqrt{3/10}r$

and centre.

The simplest applicator to build up is that having a radius of 4 cm. Obviously radium will be placed on the A circle and at the centre. It is also obvious that a little less than the full A curve and a small fraction of the X curve will be required to give unit intensity.

Let a be the proportion of the A curve to be taken and x the proportion of the X curve, and let unity intensity be assumed at the centre and also at $\sqrt{\frac{3}{4}}r$ (=3·48 cm.). Two equations can then be obtained by considering the conditions at these points:—

0·97 a+1·0 x =1 .. .. at the centre.
1·0 a+0·427 x=1 .. .. at 3·48 cm. from centre.

Which are satisfied by a=0·98.
x=0·05.

These are the proportions of the A and X curves to be taken. The point at which the intensity due to a circle of radium is most easily calculated is on the central axis (a=0 in the formula quoted above). At this point the intensity is given by—

$$\frac{\text{quantity of radium}}{r^2+d^2} \quad \therefore 0{\cdot}97\times 0{\cdot}98 = \frac{\text{quantity of radium on A curve}}{4^2+3^2}$$

and $$1\times 0{\cdot}05 = \frac{\text{quantity of radium at centre}}{0^2+3^2}$$

Hence the quantity of radium to be put on the A circle is 24 mg. and that at the centre is 0·5 mg.

In exactly the same manner it can be calculated that for an applicator of 6 cm. radius 34 mg. is placed on the B circle and 2 mg. at the centre. In both cases, on account of the method of calculation, the intensity is unity at three positions on any diameter, while check calculations show that the intensity is reasonably uniform on the whole of the plane of the skin.

When we come to an applicator having a radius of 8 cm. it is necessary to place radium on two circles and also at the centre in order to get reasonable uniformity. The two circles chosen are the C and B circles. In accordance with the method indicated above, unit intensity is assumed at the centre and also at distances 5·65 cm. and 7·30 cm. from the centre. Considering the conditions at these points in Fig. 1 the following equations are obtained:—

0·67 c+0·8 b+ x = 1 (centre).
0·92 c+0·995 b+0·225 x= 1 (5·65 cm.).
0·995 c+0·805 b+0·147 x= 1 (7.30 cm.).

The solution is c=0·810, b=0·187, x=0·308, and the corresponding quantities of radium are 40 mg., 7 mg., and 3 mg. The resulting intensity is unity at five positions on any diameter. By continuing this process Table IV. has been drawn up:—

TABLE IV

Radius of applicator.	Mg. of radium at the following radii give a skin dose of 1 γ.						
	Centre (X).	4 cm. (A).	6 cm. (B).	8 cm. (C).	10 cm. (D).	12 cm. (E).	15 cm. (F).
4 cm.	½	24	—	—	—	—	—
6 "	2	—	34	—	—	—	—
8 "	3	—	7	40	—	—	—
10 "	2	—	14	—	47	—	—
12 "	2	—	16	—	9	52	—
15 "	2	—	16	—	—	29	59

In the cases of the 12 cm. and 15 cm. applicators the intensity in the plane of the skin is unity at seven points on any diameter.

The above Table represents one of a large number of similar tables that might be drawn up. The method can be made as accurate as desired by increasing the number of circles upon which the radium is placed, until the mathematically perfect solution is obtained, in which the number of circles is infinite. The limit of accuracy desirable is, however, controlled by the fact that the radium is in containers, and therefore cannot be *uniformly* distributed on the circles.

An applicator smaller than 8 cm. diameter has not been considered as, with a distance between the radium and the skin of 3 cm. and with the whole of the radium on the periphery, such an applicator produces a maximum intensity in the centre.

The distribution of radium in non-circular applicators is at present under investigation. As far as possible the arrangement employed in the circular applicator is followed, as is shown in Fig. 3 which represents that adopted for a typical "collar."

For convenience a skin intensity of 1 γ has been taken as "standard," but this is by no means strictly adhered to and applicators are more often constructed to produce a skin intensity of 1·5 γ. Also, where it is convenient to give short daily doses, the skin intensity may be increased to 3 γ.

In the actual construction of the applicators a cheap quality dental compound is used, alone or in conjunction with sponge rubber sheet ¼ inch thick. Alternately, in suitable cases two thicknesses of sponge rubber are employed and considerable ingenuity may be required to make the applicator follow the contour of the skin. After the shape has been made, two thicknesses of "1 lb. lead" sheet are spread over the applicator on the side away from the skin. Over the lead the needles are placed in their prearranged positions and these are made secure by placing another sheet of lead over the needles, covering this with adhesive plaster and finally covering the applicator completely with lint.

It is found that the maximum skin dose is in the neighbourhood of 300–350 γ-hours, so that the tumour may receive a dose of from 150 γ-hours to 250 γ-hours, which experience indicates is less than the lethal dose for malignant glands of the neck and less than the dose given to a tongue tumour by interstitial irradiation.

For treatment of palate growths dental applicators are made. Needles 15 mm. long and containing 1 mg. of radium are fixed in grooves cut in the vulcanite of the applicator, extra lead for screenage is fixed in position, and the whole is thoroughly sealed by means of dental cement having a high softening point. In this case the absence of skin modifies the problem and the radium is arranged to give an even intensity of 2 γ in the central portion of the growth. This

is usually obtained by placing about twelve needles round the periphery of an area represented by a circle 4 cm. in diameter, the radium being situated about 1·5 cm. from the growth. In the case of such palate tumours, the optimum dose is about 300 γ-hours, which is comparable with that obtained by interstitial irradiation. The unit of intensity of gamma rays is defined on the assumption of a screenage of 0·5 mm. of platinum, which is that usually employed for interstitial irradiation. In the applicators described a screenage equivalent to 1·0 mm. of platinum is employed, so that strictly the intensity of radiation should be reduced by about 6 per cent.; other errors probably make this correction negligible.

Clinical Details of Treatment

PRE-OPERATIVE TREATMENT

The degree of septicity of the mouth requires consideration. In mildly septic mouths mouth-washes and brushing by nurse or dentist are all that is required. In moderate and severe degrees more care must be exercised in the preparation. Before 1928 it was usual to have an extensive dental toilet performed, all carious teeth being removed and the sound ones scaled and energetically brushed free of tartar and debris. Such a procedure necessarily entailed considerable trauma to the soft tissues and sometimes to the bony alveolus as well. It was found that in spite of waiting 14–21 days for the parts to heal, radium burning and necrosis of the soft tissues was more frequent than when less extensive dental measures were taken. The procedure now advised consists in removing only the very worst of the carious teeth under gas (local infiltration damages the gums), the remainder being lightly scaled and brushed.

Routine blood tests have shown that only a small percentage of the total number of cases (7 per cent.) have a syphilitic taint. In all cases where the Wassermann reaction is positive an intensive course of antisyphilitic treatment before irradiation would appear to allow of more favourable results.

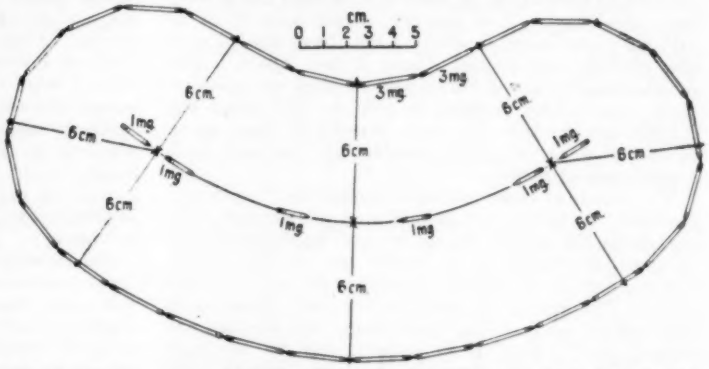

FIG. 3.—The arrangement of a total of 90 mg. of radium on a typical "collar" is shown. The boundary line has not been drawn, but the longer needles are arranged as close to the periphery as possible.

TREATMENT OF THE PRIMARY LESION

The tongue.—Growths can be divided into tumours of the free mobile portion (anterior two-thirds) and those arising from the pharyngeal portion (posterior one-third).

In the anterior two-thirds the cases have varied in degree from small localised tumours to large masses spreading widely through the tongue and often invading the floor of the mouth. Treatment should not be withheld on account of the extent of the growth, since very advanced lesions can often be improved and the patient's life rendered more tolerable.

Clinically the growths tend to fall into three types: the ulcerous, where there is early ulceration and a marked invasive tendency; the nodular, where the growth arises in the deeper layers of the epithelium and spreads as a nodular infiltration with little tendency to ulceration; and the papillomatous, where the growth is of a warty type with comparatively little invasive tendency. The third type is seen in the older patients; the ulcerous more especially in the younger. The papillomatous is by far the most and the ulcerous the least radiosensitive. No correlation has been found between the microscopic structure of the growths and their degree of radiosensitivity, and on several occasions a tumour has exhibited at different points the microscopical appearances of several of the Broders groups—i.e., the microscopical structure is not uniform throughout any given growth.

Interstitial needling is the routine treatment, using needles containing 1 mg. of radium element screened

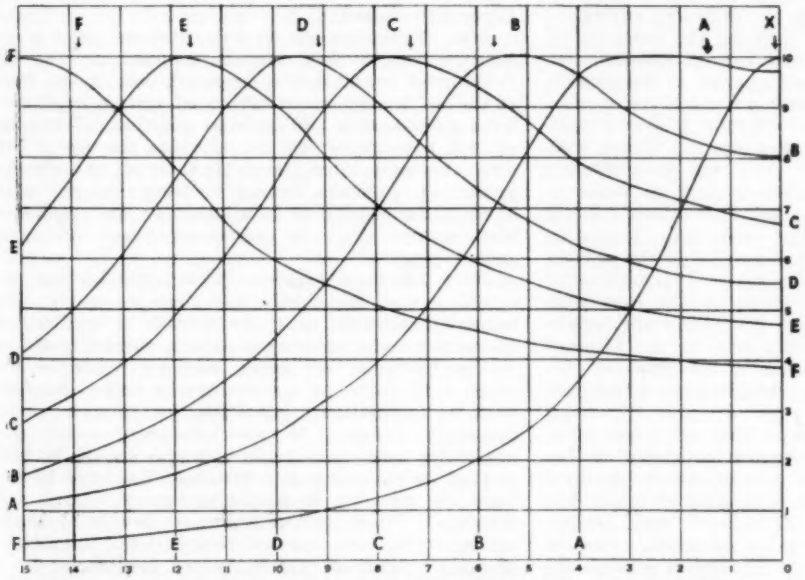

FIG. 2.—Curves showing the variation of the intensity of radiation in a plane 3 cm. from radium uniformly distributed on circles of 0 cm. (X), 4 cm. (A), 6 cm. (B), 8 cm. (C), 10 cm. (D), 12 cm. (E), and 15 cm. (F) radii. The squares in the horizontal direction represent centimetres and in vertical direction tenths of the gamma unit.

by 0·5 mm. of platinum and of an overall length of 27 mm. These needles are of adequate power and sufficiently screened to be almost universally useful in mouth cases. The number of needles required depends on the size of the growth and the method of estimating the number of needles to be used has already been described. The number varies from 7 to 15 and they are inserted about 1 cm. from the edge of the growth and spaced about 2 cm. apart. The needles should be well buried and stitched into position with care. The radium is left in situ until the "optimum reaction" is seen, usually in from seven to twelve days, when the needles are removed with a minimum of trauma.

The phase of tissue change termed the "optimum reaction" is fairly well defined and all workers with radium in the mouth should be well acquainted with it, since, if irradiation is carried beyond this point, a good deal of avoidable burning and necrosis will occur. The growth becomes softer and rather more hyperæmic; and at the spots where the needles are buried small white areas appear, due to localised tissue necrosis. On the surface of the growth soft, white plaques of lymph appear and beneath them, if the lymph be removed, is found a smooth red surface. Failure to appreciate this reaction results in under- or over-exposure. In this situation lead protectors for the alveoli are not required, since the needles are sufficiently buried in the soft tissues to prevent damage to the jaws.

In the posterior third the growths are usually more advanced when first seen and are often of the ulcerous type, so that widespread infiltration of the base of the tongue and lateral spread to the pharyngeal wall are frequent.

Infection of the upper deep glands of the jugular chain is early, and there is also a considerable tendency for crossed infection to the glands of the opposite side. For these reasons, and on account of the fact that these growths are less radiosensitive than those of the fore part of the tongue, the prognosis is bad.

Treatment is carried out by interstitial irradiation on the lines laid down above, but a satisfactory deposition of the needles is more difficult to achieve. (If trans-oral implantation is difficult, additional access may be obtained by splitting the cheek or by lateral pharyngotomy.) Great care is necessary to get beyond the backward prolongation of the growth, and sometimes it is impossible to stitch the needles into position at this site. Rather larger needles should be used and pushed well into the tissues with a right-angled introducer; they will then usually remain in position. It is obvious that the observation of the optimum reaction will prove more difficult in growths so far back, but with care it can be ascertained and the needles removed at the correct time. Radon seeds naturally suggest themselves as an alternative to needling owing to the ease with which they can be introduced, but we do not believe that they are nearly as efficacious as the element itself. The average dose used in the cases in this series has been eleven 1 mg. needles kept in position for nine days.

Floor of mouth.—Cases in this site are often advanced and have not infrequently spread to the tongue or alveolus. Where the growth is confined to the floor of the mouth it is treated by interstitial irradiation, using needles of 16 or 27 mm. length, as required; an average number is seven. Should the needles abut closely on the alveolus it is necessary to fit a lead protector to the jaw. When the alveolus is affected it is useless to treat by irradiation only; the part of the growth on the floor of the mouth is carefully irradiated on the usual lines but omitting the lead protector. At the end of four or five weeks the growth in the floor will be much reduced in size; the alveolar portion of the growth is now excised, together with the remains of the growth in the floor, in one piece. The excision is done widely, splitting the lip or cheek or both if required to facilitate access. After exposure the bone is drilled with a burr at several points and the holes connected up with a Gigli saw, the lower border of the mandible being left as a bony bridge. After healing is complete—which takes from six to eight weeks—the case is watched for a further month and the cavity is then irradiated by means of a dental applicator built to a cast of the mouth. The dosage carried by the applicator is calculated on the lines laid down in section *a*.

The irradiation must be closely watched, the newly formed epithelium lining the cavity being very delicate and easily damaged. There is no typical optimum reaction, and the irradiation should be stopped as soon as lymph plaques appear on the epithelium; as a rule five to six days are required. The rest periods, during which the applicator is out of the mouth, should be fairly long—at least six hours in the 24.

Inner aspect of cheek.—Growths in this region are highly radiosensitive and give excellent results provided that extension to the alveolus has not occurred. Interstitial irradiation is employed, and since the needles can be well buried no protector to the alveolus is necessary. If the cheek is thick, an external applicator of stent is applied in addition to the outside of the cheek. The applicator is made on the principles previously laid down, but carries half the usual dosage.

Involvement of the alveolus adds greatly to the difficulty of dealing with the case and renders the outlook much worse. In two advanced cases the cheek part of the growth was irradiated, and a month later the alveolus was excised leaving a bony bridge to maintain the continuity of the jaw. Recurrence occurs rapidly, and if the alveolus be markedly involved the case should be regarded as beyond treatment.

Lip.—Epitheliomata in this site are very radiosensitive while they remain confined to the lip. Interstitial irradiation is required, but if the body of the lip is extensively infiltrated surface irradiation by a stent cast is advisable in addition. When the growth extends on to the alveolus the lip is first irradiated and, after a suitable interval, the alveolar growth is excised, leaving a bony bridge. After healing the cavity is irradiated by an applicator. The results even in advanced cases are very encouraging.

Hard and soft palate.—These growths are not common and as a rule are detected early. For some considerable time the growth is confined to the mucosa and submucosal layers, spreading out on the surface but not going deeply; while in this stage some degree of success can be looked for from surface irradiation, interstitial irradiation being impossible owing to the small depth of tissue. The applicator must be a perfect fit and should be built so that the radium is at a distance of at least 10 mm. from the growth; it should be lightly filtered with thin lead. Howkins, to whom we are indebted for all our applicators, has described in detail the method of making these often complicated appliances.

The stage of optimum reaction is usually well defined and requires longer to develop than where interstitial irradiation is used. Where the bone is

involved the tumour should be removed widely by surgery, and after healing is complete the cavity should be irradiated by an applicator built to fit the cavity. Subsequently an obturator is required to make good the defect in the hard palate. In the soft palate needling is impossible owing to the thinness of tissue, while surface irradiation is unsatisfactory owing to its motility. Diathermy excision is the best method available.

TREATMENT OF THE GLAND FIELDS

This still constitutes the main problem. In 60 per cent. of all cases the primary growth disappeared and the site remained free from recurrence, but in a proportion of these cases the glandular deposits have proved resistant to all treatment and have killed the patient. Clinically the cases fall into three groups :—

(1) The glands are not enlarged.
(2) The glands are enlarged but are operable.
(3) Either the glands are enlarged and fixed or there is diffuse infiltration of the cellular planes with new growth.

In all cases the primary growth has been dealt with at least 14 days previously.

(1) The usual procedure is a dissection of the gland fields, draining the area on one or both sides as required. We do not remove the sternomastoid or the internal jugular vein, but particular care is taken to go well above the posterior belly of the digastric as it lies under the parotid and to clear the jugular chain right up to the base of the skull. Venous bleeding from tributaries of the jugular is apt to be troublesome. A month after the neck is healed the area is widely irradiated; a sorbo or paste collar is applied and retained until there is well-marked skin erythema, produced slowly over a period of from 10 to 15 days. We have grave doubts as to the efficacy of irradiation alone in the treatment of cervical deposits, owing to the depth at which they are often placed and their encapsulation in the lymph glands. In certain cases, where the patients are elderly or feeble and the primary growth is small and has responded readily to irradiation, it has been thought justifiable to leave the neck alone, watching the case closely. Of ten cases where this was carried out nothing further was required in five, but in the remainder the glands enlarged and treatment was carried out as above.

(2) The glands are palpable but operable. Treatment is carried out on the lines advocated above. It is not infrequently found that microscopically the enlargement is due to inflammatory changes.

(3) The glands are enlarged and fixed, or there is diffuse infiltration of the neck by growth. The diffuse brawny induration is seen only in the worst cases and is of the gravest omen. The growth has erupted through the capsule of the glands and run widely through the connective tissue planes of the neck. It is a terminal stage in the neck infection and we have never seen it respond to any form of treatment. (There has been no opportunity of trying the radium bomb.)

Where the glands are enlarged and fixed but there is no diffuse infiltration, the outlook is slightly better and treatment should be attempted. The only method that has given any results in our hands has been to expose the infected gland areas by reflecting carefully planned flaps and to needle the affected part thoroughly. Usually about 20 to 25 needles of 2 mg. strength are used and are left in position for seven to ten days. They are then removed by reopening the neck; some suppuration in the neck almost always follows, but the wounds ultimately heal well. This is followed, after the wounds have consolidated, by X ray irradiation of the neck. We have seen very definite and apparently complete regression of the infected glands in three cases and some degree of improvement in several others.

It will be seen from the methods advocated above that surgery, including surgical diathermy, has only a minor part to play in the treatment of the primary lesion. When the soft tissues alone are involved (and these cases constitute at least 80 per cent. of all cases that come within the scope of treatment) irradiation constitutes the best method of attack, the exception being the soft palate. When bone is invaded excision alone offers any chance of obliterating the disease.

From time to time cases of epithelioma of the tongue are met with (three in the present series) which fail to respond to repeated irradiations. Usually there is a strong underlying syphilitic taint, and if after two irradiations no improvement is manifest then diathermy excision is required. This usually means the removal of half or more of a leucoplakic tongue carrying a radio-resistant growth upon it.

In very foul ulcers and exuberant papillomatous growths a light application of the diathermy current is often beneficial before irradiation. It causes a superficial slough which on separation leaves a clean surface of growth, allowing the needles to be placed in a much cleaner area; the healing of the growth is apparently facilitated and rendered more certain than by irradiation alone.

Results

Table V. embodies the results of treatment of all cases dealt with at the General Hospital, Birmingham, for the six years 1926–1931 (160 cases), plus 32 cases treated in private. The cases have all been closely reviewed recently, and in the very few instances where it has been found impossible to trace the patient he has been presumed dead.

The cases are grouped under the following heads :—

(*a*) Apparent clinical cures. No sign of disease is present in mouth or neck and the patient is in good health after two years or more.
(*b*) Improved. Cases have progressed well from a clinical standpoint but cannot be placed in group (*a*) owing to their relatively recent treatment.
(*c*) Not improved.
(*d*) Dead.

TABLE V.—*Results 1926 to 1931*

Site.	Cases	Groups			
		(*a*)	(*b*)	(*c*)	(*d*)
Ant. ⅔ tongue..	45	15(33·3%)	3	3	24
Post. ⅓ ,, ..	49	17(34·9%)	3	7	22
Floor of mouth	30	6(20%)	2	5	17
Soft palate ..	8	2(24·4%)	1	1	4
Hard palate ..	6	1	1	1	3
Cheek	37	24(65%)	1	1	11
Lip	17	11(65%)	0	0	6
Total ..	192	76(39·6%)	11(5·7%)	18(9·4%)	87(45·3%)

It will be seen that the cheek and lip are the most favourable sites for radium therapy. The growths are extremely radiosensitive, and the scar left is wonderfully soft and pliable. Glandular infection is usually late and not so widespread as in the tongue and floor of the mouth; this probably depends on two factors: firstly, the less abundant lymphatic network; and secondly, the smaller amount of muscle present, for there cannot be any doubt that muscular action plays a large part in aiding the lymph flow, and this favours the deposition of cancerous lymphatic emboli. The figures for the tongue do not show the

fact that the primary growths in the majority of cases are favourably influenced, the patients' lives being rendered much more tolerable. It is the glandular spread which proves so fatal. The bad results shown for cancer of the floor of the mouth are due to the fact that this area is relatively radio-resistant compared with the rest of the buccal cavity, and that the spread to the gland fields and alveolus is early.

It would seem from a consideration of those cases of clinical cures obtained in the earlier years that there is considerable hope for its persistence over a number of years, though it is too early for figures to be of much value in the attempt to form any idea of permanent cure.

Summary and Conclusions

1. The unit of dosage adopted is termed the gamma hour and represents that received in one hour at a distance of one centimetre from a point source of 1 mg. of radium, screened by 0·5 mm. of platinum. The dosage received by typical tongue and breast tumours is worked out on this basis, allowance being made for absorption in the tissue.

2. A method of arranging the radium in circular applicators to give a uniform irradiation of the skin is shown, and the maximum dose that it is possible to give the skin when treating glands of the neck is calculated. It would appear that the lethal dose for average tongue, palate, and breast tumours is of the same order as the lethal dose for the skin—i.e., 350 gamma-hours.

3. The clinical methods adopted for the treatment of the primary lesions are described in detail, as are also those adopted for the treatment of the gland fields. In addition, the clinical results are tabulated for 192 cases of buccal cancer treated by radium over a period of six years.

4. It would appear from clinical and physical considerations that the ultimate method of choice for treatment of the gland fields will prove to be irradiation at a distance by a powerful source.

The work on which this paper is based has been carried out in the radium department of the General Hospital, Birmingham. The radium used is in part that on loan from the National Radium Commission and the Medical Research Council.

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NURSES' SUPERANNUATION SCHEME.—The sixth annual meeting of the Federated Superannuation Scheme for Nurses and Hospital Officers (Contributory) was held recently at the College of Nursing. Under the scheme insurance policies are taken out for individual employees of a large number of institutions, the annual premiums being based upon a percentage of salary and emoluments, and paid partly by the employer and partly by the employee. It was reported that at the end of 1932 there were 12,019 members (since increased to over 13,000) and that institutions representing 64 per cent. of the total voluntary bed complement of Great Britain had adopted the scheme. Of institutions with 200 or more beds 84 per cent. have joined, but of the smaller ones only 50 per cent. are in the scheme. Sir Edward Penton, who presided, emphasised the importance of "the complete and satisfactory interchangeability for pension purposes between State and municipal institutions and the voluntary hospitals and kindred institutions." The "alleged difficulties," he thought, were not insurmountable.

THE RÔLE OF THE ROUND LIGAMENTS IN BACKWARD DISPLACEMENT OF THE UTERUS

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IT will be generally agreed that the symptoms associated with retroversion of the uterus are by no means specific to that condition. It will also be agreed that retroversion may exist without symptoms of any kind, and that operative replacement of the uterus is not always followed by the relief of the symptoms supposed to be caused by the malposition. The symptoms—increased menstrual loss, pelvic pain, backache, and leucorrhœa, for example—are those of pelvic congestion which may be due to various causes of which retroversion is sometimes, but not always, one. Consequently there is often some uncertainty in any particular case whether the misplacement discovered on examination is actually the cause of the symptoms of which the patient complains. Because of this uncertainty, it is the practice with many gynæcologists not to advise operation until pessary treatment has been given a trial; if the symptoms are not relieved by replacement by a pessary, it is assumed that operative replacement will be equally unsuccessful.

If operation is decided upon, the appearance of the uterus at the time of operation is of the greatest assistance in deciding whether the retroversion is to be regarded as the cause of the symptoms. If it has the pearly-grey or pink colour characteristic of the uterus in its normal position, one may safely decide that the misplacement is not the cause of the symptoms and that replacement will be of no benefit—except, perhaps, in some cases of sterility or of prolapse of the ovaries. Generally, however, in cases that come to operation, the fundus of the uterus, especially on its posterior aspect, shows very definite evidence of congestion. It is a little enlarged, dark red, even plum coloured, and its posterior surface is often dented or faceted as if from some degree of œdema. What is the origin of this congestion? It is with the object of offering an answer to this question that this communication is written.

In endeavouring to find an explanation of the pelvic and especially the uterine congestion, there is one point that it is important to recognise; this is that the appearances presented at operation, with the patient in the Trendelenburg position, are bound to give a very imperfect picture of the condition actually present when the patient is walking about or working. It may be that this point is generally appreciated, but it has not, so far as I am aware, been mentioned. It is so important that it deserves to be stressed. The patient who is lying on the operating table may have a retroverted uterus, but she is not, at the time, suffering from the symptoms of that condition. She has been lying in bed for a day or more and the pelvic congestion has been relieved by rest. The effect of the Trendelenburg position is to reduce the congestion to a minimum and probably to modify the degree of backward displacement, though even in these circumstances some degree of congestion can be seen.

CONDITION OF RETROVERTED UTERUS IN NORMAL LIFE

I believe it is not an exaggeration to say that we rarely, if ever, see at an operation retroversion of the

uterus in the condition in which it exists when it is causing symptoms. To obtain an entirely accurate picture of the condition of the pelvis which will show the state of affairs when symptoms are actually being complained of would be, of course, impossible; for it would involve operating when the patient is tired with walking or working, preferably during a menstrual period, and with the patient in a more or less vertical position. I have, however, in a few cases, endeavoured to reproduce these conditions, as far as can reasonably be done, by allowing (perhaps I should say persuading) patients to stand or walk about the ward for an hour before operation; the patient is anæsthetised in a semi-vertical position (with shoulder rests inverted and placed in the axillæ). The abdomen is opened in that position and, the intestines being packed away, a view is obtained of the pelvis. The patient is then placed in the Trendelenburg position and the operation proceeded with.

THE ROUND LIGAMENTS IN LIFE

The point of particular interest in the view of the pelvis obtained in these conditions is the relation of the round ligaments to the ovarian vessels. As one would expect, the round ligaments are stretched, straightened, and thin, and the uterine attachments of the ligaments are out of sight because the uterus itself is acutely retroflexed so that the fundus is lying in Douglas's pouch. The distended ovarian veins, coming down from the abdomen to turn inwards through the broad ligaments on their way to join the uterine veins, are seen to be crossed by the round ligaments; at the point of crossing, the contact between the ligament and the veins is so close that it is evident that sufficient pressure is being exerted on the veins to obstruct, more or less, the flow from the uterine to the ovarian veins. Bearing in mind that whatever pelvic congestion is brought about by an hour's walking about and a semi-reclining position is but an imperfect imitation of the state of affairs when the patient has done a day's work and is actually suffering from backache, we may reasonably infer, I think, that, in the latter circumstances, the pressure exerted by the ligament and the resulting obstructive congestion would be considerably greater. Only once have I seen a condition resembling that described in a patient operated on in the ordinary way without special preparation.

I do not claim that I have seen exactly the same picture in all cases examined in the reclining position; in some cases, one ligament is only lightly in contact with the veins, the other not touching at all. But even in these cases it may well be that symptoms are only complained of when the fundus is forced down so low that the line joining the uterine attachment of the round ligament to the internal abdominal ring passes below the normal position of the junction of the ovarian and uterine veins. When this happens it must follow that pressure will be exerted on the vessels.

In the cases I have observed retroversion has been associated with retroflexion. Although I have not seen it, I imagine that simple retroversion might cause the same relation between the round ligaments and ovarian vessels provided that the degree of tilting of the uterus is sufficient to allow the fundus to be pressed well down into Douglas's pouch. However, I think it must be commoner when retroflexion is present. Certainly a moderate degree of retroversion will not allow the ligament to come into contact with the ovarian vessels. As an illustration of this point one case in particular was of interest; it was diagnosed as one of retroflexion. At operation, however, the uterus was found retroverted without flexion; a fibroid was projecting from the posterior wall and was lying in Douglas's pouch. There was no sign of congestion of the uterus, and the round ligaments were, of course, lying quite clear of the vessels. This patient had none of the ordinary symptoms of backward displacement; there was no backache, no leucorrhœa, and the menstrual loss was scanty. She complained only of a bearing-down feeling and of difficulty and pain on defæcation.

The question whether the round ligaments actually play the part I have suggested in the production of congestion could, I suppose, be settled by simply dividing the ligaments in a suitable case and noting if symptoms were relieved. Such an operation would, no doubt, be unjustified in view of the satisfactory results obtained in more orthodox ways. In the absence of such proof I submit that the appearances I have described allow of the inference being made that the round ligaments do, by their compressive effect on the ovarian veins, play a part in the causation of symptoms in backward displacement of the uterus.

The round ligament is generally regarded as being too slight a structure to be able to play an active part in holding the uterus in its normal position of anteversion. During pregnancy, however, it becomes a powerful muscular band; the late Mr. Christopher Martin held the view that its only functions were to steady the uterus in pregnancy and to aid the uterine contractions in labour. It may be doubted, however, if it is true that, in the non-pregnant woman, the ligament has no function whatever. For it may sometimes be observed, during an operation on a case of retroversion, that after manual replacement of the uterus in a forward position, the round ligaments, previously thin, overstretched and apparently toneless, become in a few minutes thickened and shortened. This change is evidence of a partial restoration of muscular tone and suggests an attempt to perform a function—namely, to hold the body of the uterus forwards. It seems to be associated with the remarkable increase in tone of the whole uterine musculature that occurs when a retroverted uterus is replaced and which results in the almost immediate shortening of the cavity of the uterus, as pointed out by Fothergill. If the misplacement has been of long standing, it is unlikely that recovery of muscular tone will be complete enough for the position of anteversion to be maintained. But the spontaneous replacement of the uterus that takes place in many cases of post-puerperal retroversion is evidence that recovery may follow a short period of over-stretching.

THE USE OF CONTACT GLASSES

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The advent of a new method of treatment frequently entails the employment of that method in conditions other than that for which it was originally intended; such trials are often disappointing and lead to the measure being wholly and unjustifiably condemned. Contact glasses have not avoided this tendency, and at the present time their use is not entirely popular, since they have not proved satisfactory for all the ocular conditions wherein they have been employed. Such conditions range from hay-fever to the alteration of the colour of an eye according to taste.

In 1888 Fick first conceived the idea of abolishing the refractive power of a distorted cornea by maintaining on its outer surface a layer of fluid equal in refractive index to that of the aqueous humour: this layer is supported by means of a glass shell conforming to the curvatures of the anterior segment of the eye; such a shell is held by capillary attraction, in close apposition, and is covered by the lids. Thus the idea is not of recent origin, but has come into prominence lately since the firm of Zeiss have brought the manufacture of the glasses to a high state of technical excellence. It is now possible to have these glasses graduated to a quarter of a millimetre.

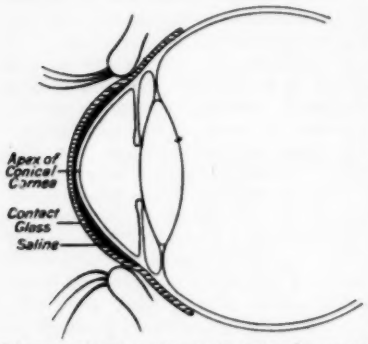

Diagram showing the contact glass in position over a conical cornea, a layer of saline intervening. (Reproduced from the *British Journal of Ophthalmology*.)

Defective vision which results from conical cornea is mainly due to the excessive refraction which rays undergo on transmission through such a cornea. In mild degrees this astigmatism may be neutralised by cylinders, but in most cases the distortion is too great to permit of such optical correction. If the refractive power of such a cornea be abolished by a contact glass-saline meniscus combination, then clarity of vision is re-established.

Their early success in cases of high astigmatism led to the application of the glasses to other types, but it must be remembered that where the refractive error can be corrected by ordinary lenses, contact glasses are not indicated unless for special reasons. These glasses are not intended to replace ordinary spectacles, but are for use in cases where spectacles cannot be employed, a fact which must be clearly borne in mind. Indiscriminate application has led to wholesale condemnation.

Two cases are recorded to indicate the value of this method: the first is that of a girl with conical cornea, who has worn the glasses for nearly two years and is therefore past the experimental stage; the other is that of a medical man who required them for a special purpose.

CASE 1.—For four years Miss A, aged 24, has been under observation as a case of developing conical cornea, and eventually her refractive error became so astigmatic that ordinary spectacles failed to improve her vision beyond 6/60 in each eye; she was unable to continue her work any longer as a pastry cook. In August, 1931, contact glasses were fitted giving her normal vision in each eye. She has continued to wear these ever since, and is comfortable; without them she is unable to read the figures on her wrist watch. The psychological effect of the glasses has been very great, and her whole mental outlook altered.

CASE 2.—A medical man, aged 26, was prevented from enjoying his hobby of swimming by a myopia of 6 dioptres in each eye. This was of great inconvenience in the recognition of distant objects during swimming, and it was not possible under those circumstances for him to wear his usual correction. Contact glasses were fitted six months ago, rendering his vision normal in each eye, and enabling him to take the water without spectacles, and in consequent greater comfort.

The practical details of these glasses are few. They are easy to insert and are comfortable in use if fitting correctly; no local anæsthetic is necessary, the saline meniscus being isotonic with the tears, and therefore non-irritant. There is less risk of damage to the eye if a contact glass is broken in situ than there is with an ordinary spectacle lens, and no case has yet been recorded (Rugg-Gunn). Their cost is about £5 each.

Contact glasses have proved successful in (1) conical cornea; (2) neuro-paralytic keratitis; (3) selected cases of refractive error; but for ordinary errors of refraction they do not replace the usual means of correction.

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COMPLEMENT-FIXATION EXPERIMENTS ON 200 STRAINS OF CORYNEBACTERIUM DIPHTHERIÆ

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OVER thirty years ago Bordet and Gengou showed that specific complement-fixation reactions could be obtained for *Bacillus pestis*, *B. typhosus*, and *B. proteus vulgaris*. Dean in 1911 used a modification of this method and claimed that it provided a means of differentiation between *Bacillus paratyphosus* B and *B. aertrycke*, a finding supported by the work of Hecht Johansen (1923).

The studies of Weil and Felix in 1920 demonstrated that complement-fixation tests gave a resultant grouping of the salmonella organisms comparable to that obtained by agglutination reactions. Eberson (1918) used this method of approach to the problem of separating diphtheroid organisms and his results indicated the possibility of thus grouping four strains which gave differing biological reactions. Hooker (1916) experimented with strains of *B. typhosus* and showed that these fell into three groups, a finding supported by absorption tests.

We became interested in this subject again as a result of a tentative suggestion made by one of us (J. M.) in 1932 in connexion with the problem of *Corynebacterium diphtheriæ*, "gravis" and "mitis." It was hoped that this procedure might help to settle the difference of opinions on this subject. Before commencing any work on strains of this organism a technique was worked out on other closely related organisms, concerning which knowledge was more firmly established. The same technique was applied throughout.

The antigens used were saline suspensions prepared from 24-hour smooth cultures grown on agar and killed with formalin. The antisera were prepared from rabbits and the hæmolytic system consisted of sheep's washed red blood-cells and Burroughs, Wellcome and Co.'s amboceptor (titre 1–2000). Owing to the close relationship of gravis, mitis, and intermediate, cross tests were necessary to obtain any type indications.

The tests were graded by diluting the antigen, but in order to get reliable comparisons each antigen was carefully standardised by the opacity method. This method of antigen dilution proved better than working with a constant antigen and varying dilutions of serum.

The tests were incubated for 45 minutes in the water bath at 37° C., the hæmolytic system was added, and the results read after a further 30 minutes' incubation.

Our results are shown in Tables I. to IV.

TABLE I.—*Shiga and Flexner (Lister strains)*

	Shiga antiserum.						*Flexner antiserum.*					
Antigen dilution ..	1	1/2	1/5	1/10	1/15	1/30	1	1/2	1/5	1/10	1/15	1/30
Flexner antigen ..	±	−	−	−	−	−	+	+	−	−	−	−
Shiga antigen ..	+	+	+	+	±	−	+	±	−	−	−	−

TABLE II.—*B. typhosus and B. paratyphosus* B (*Oxford*)

	Typhoid antiserum.						*Para. B antiserum.*					
Typhoid antigen ..	+	+	+	+	+	+	±	−	−	−	−	−
Para. B antigen ..	±	−	−	−	−	−	+	+	+	+	+	+

TABLE III.—*Gonococcus and Micrococcus catarrhalis (local strains conforming to type)*

	Gonococcus antiserum.						*M. catarrhalis antiserum.*					
Gonococcus antigen ..	+	+	+	+	+	+	+	+	+	±	−	−
M. catarrhalis antigen ..	+	+	+	±	−	−	+	+	+	±	−	−

TABLE IV.—*Salmonella Group (Lister strains)*

Antigens.	American antiserum.	English antiserum.	Derby antiserum.
American *suipestifer* ..	1/100	1/50	1/75
English *suipestifer* ..	1/50	1/100	1/50
Derby	1/50	1/50	1/100

As can readily be seen, the method employed gave clear-cut differentiation between these groups of closely allied organisms.

Acting upon this, we attempted to apply the same technique to 200 strains of *C. diphtheriæ* isolated in this laboratory and carefully tested along the lines described by McLeod and his co-workers. Support for such an attempt is afforded by the work of Bandi in 1903 who demonstrated a complement-fixation reaction for *C. diphtheriæ*. The sera were prepared by inoculating rabbits with killed cultures of strains conforming exactly to the Leeds criteria of gravis and mitis types respectively. Later an "intermediate" serum was added. The results appear in Tables V. and VI. Table V. gives the findings when 100 strains were run up against gravis and mitis sera only and Table VI. tabulates the grouping when gravis, mitis, and intermediate sera were tested with a further 100 strains. The following conclusions may be drawn :—

(*a*) The serological relationship between the three types is very close.

(*b*) The gravis was more antigenic than the other two, a statement supported by the comparative ease with which gravis antisera were prepared. To obtain fixation with our antigens of *C. diphtheriæ* and their corresponding antisera, the bacterial suspensions had to be used ten times as strong as those required for the salmonella experiments.

(*c*) The gravis type proved to be more distinct than the other two. Of these strains, 95 per cent. in the first batch and 68 per cent. in the second gave results true to type.

TABLE V.—*First 100 Strains Tested against Gravis and Mitis Sera*

Description of strains.	Number tested.	Complement-fixation tests.			—
		Gravis.	Mitis.	No indication.	
Gravis (all tests)	22	21	—	1	95% correlation.
Mitis (all tests)	52	3	36	13	69% correlation.
Intermediate (all tests)	3	1	2	—	—
Mitis (all except atypical colonies)	8	3	5	—	—
Gravis (all except atypical colonies)	4	3	1	—	—
Gravis (hæmolytic)	4	2	—	2	—
Mitis (non-hæmolytic)	2	1	1	—	—
Mitis colonies. Hæmolytic, no pellicle in broth, ferments polysaccharides	2	1	1	—	—
Gravis colonies. Hæmolytic. No pellicle. Ferments dextrin only ..	2	1	—	1	—
Gravis colonies. No pellicle. Non-hæmolytic. Early alkaline producer. No polysaccharides fermented	1	1	—	—	—
Total	100	37	46	17	—

TABLE VI.—*Second 100 Strains Tested against Gravis, Mitis, and Intermediate Sera*

Description of strains.	Number tested.	Complement-fixation tests.				—
		Gravis.	Mitis.	Intermediate.	No indication.	
Gravis (all tests) ..	22	15	—	2	5	G. 68% I. 9% N.I. 23%
Mitis (all tests)	31	—	9	9	13	M. 29% I. 29% N.I. 42%
Intermediate (all tests) ..	24	6	—	15	3	G. 25% I. 62·5% N.I. 12·5%
Mitis (atypical colonies)	2	1	—	1	—	—
Gravis (atypical colonies)	5	1	—	3	1	—
Mitis (ferments dextrin)	14	—	3	5	6	—
Gravis (hæmolytic, late alkaline)	1	1	—	—	—	—
Mitis colonies (ferments dextrin, non-hæmolytic turbid in broth) ..	1	—	—	1	—	—
Total	100	24	12	36	28	—

G. = gravis. M. = mitis. I. = intermediate. N.I. = no indication.

(*d*) The typical "intermediate" strains were more closely related to the gravis type than were the mitis strains. Of the 27 intermediate strains tested, 7 gave gravis results, and of the 83 mitis strains tested, only 3 gave gravis results, but these were in the first batch when an intermediate serum was not used. When three sera were used not a single mitis strain gave a gravis result.

(*e*) Individual intermediate and mitis strains varied greatly in antigenic activity.

(*f*) Some mitis and intermediate strains could only

be separated into groups rather than definite types. This is particularly shown by the results obtained from mitis strains using three sera. Only 29 per cent. gave results true to type (as judged by fermentation reactions and colonial appearance); 29 per cent. gave intermediate results and 42 per cent. gave no indication whatever.

(*g*) The 23 irregular strains in the second 100 which could not be classified by the Leeds method reacted as follows: 10 intermediate, 7 no indication, 3 mitis, and 3 gravis, showing that these irregular strains were heterogeneous antigenically. In the first batch, where only gravis and mitis sera were used, 23 irregular strains were tested, of which 12 proved to be gravis, 8 mitis, and 3 gave no indication. It is likely that, had an intermediate serum been available in these cases, a large number of apparently gravis results would have turned out to be intermediate and so given a closer correlation with the second batch of irregulars.

(*h*) Ten normal human sera fixed the three types very feebly (1 in 4) and equally.

In complement fixation with bacterial antigens many incalculable factors are involved. In the above investigation we have tried to control some of them by doing comparative cross-tests with antigens prepared in an identical manner. There are, however, strain peculiarities which cannot be gauged accurately, such as the rate of autolysis and the physical conditions affecting adsorption. With these reservations we contend that serological grouping by this means does not coincide with the method of classification suggested by the Leeds workers.

We wish to acknowledge our indebtedness to F. W. Duke for his help with the typing of cultures and G. Shotton for his keeping of records.

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Clinical and Laboratory Notes

CONGENITAL EPULIS

WITH REPORT OF A CASE

BY PROBODH CHANDRA DAS, M.B. CALCUTTA

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THE mother of the baby, a Hindu aged 20, was delivered on Nov. 16th, 1931, of a male child at full term after a labour lasting six hours. The presentation was vertex, L.O.A., and the baby weighed 5½ lb., was 19 in. long, and normal in every respect. Two previous pregnancies and labours had been normal. There was no history of syphilis in the parents and the family history revealed nothing of importance.

A few hours after the birth a growth about the size of a large bean was noticed hanging out of the mouth of the baby. The tumour was attached by a broad base to the anterior surface of the lower alveolar process, at the site of the future incisor tooth on the left side. It was quite movable and painless, and it could be easily handled without making the baby cry. Suckling was difficult, and spoon-feeding was resorted to. The tumour was removed on the fourth day, after ligaturing the pedicle with silk. The subsequent treatment consisted only in applying absolute alcohol to the stump once a day. The wound healed by first intention.

The tumour was 2·2 cm. long and 1·5 cm. broad at its widest part, pear-shaped, with a notch on the under surface corresponding to the position of the lower lip. The circumference at its broadest part was 5 cm. It was pale red in colour with a few superficial raw areas, evidently due to friction. The tumour was solid and rather hard, and little resistance was felt on cutting. The cut surface presented a rather uniform homogeneous appearance with a few fine white streaks running in different directions. The tissue looked œdematous, but no blood or fluid oozed out.

Sections were taken from three different areas. These were fixed in Zenker's fluid, hardened, and dehydrated in graded alcohols, cleared in xylol, and embedded in paraffin. Sections were cut 5μ thick and stained with hæmatoxylin and eosin, Van Giesen and Mallory's aniline blue. The sections were examined by Prof. M. N. De, of the Medical College, Calcutta, whose report runs as follows:—

"Externally there is a layer of stratified epithelium, mainly consisting of four or five layers of cells. The basal layer is taller than the rest, and in certain areas it is definitely columnar. The cells become flatter towards the surface. The most superficial layer is cornified. Under the basal layer, in a broken interrupted line, there is a fine layer of collagen fibres (staining blue with Mallory's aniline blue), possibly representing a basement membrane. From this line fine strands of collagen fibres run irregularly towards the centre of the growth and blend with the reticulum, which is very marked (also staining blue with Mallory's aniline blue). In some places the collagen fibres have become much thickened and wavy, resembling white fibres of adult connective tissue. The main bulk of the tumour is composed of cells which are of varying sizes and shapes, but the majority of them are oval or elliptical, while some are spindle-shaped. Each individual cell has a more or less central, round, relatively small nucleus; and each nucleus has a well-defined nucleolus and a chromatin network. The cytoplasm is granular. When stained with Mallory's aniline blue, the cytoplasm takes a pale purplish and the nucleus a red stain. The parenchyma is traversed by many vascular channels, mainly arterioles and veins, and a few lymphatic vessels. The walls of the blood-vessels are thin and lined by a layer of endothelium. There are some extravasated red cells within the tumour tissue."

FIG. 1.—Photograph taken just before operation, showing the tumour in situ. Note how the tumour is hanging out of the mouth.

The structure of this tumour corresponds with that described under the term fibroma; it consists of fibroblasts, fibrils, and blood and lymph vessels. The cells of genuine fibromata are usually larger and more numerous than in the adult connective tissue. The matrix of fibromata also varies. In many cases it has the character of embryonal connective tissue. Fibroglia fibres of Mallory and wavy collagen fibres are regularly present. Soft fibromata contain a considerable proportion of cells lying in a soft matrix which is often œdematous. This tumour has all the characteristics of a fibroma composed of embryonic connective tissue.

RECORDED CASES

Congenital neoplasms are rare, and of these epulis is one of the rarest. Literally, epulis means that

the tumour is situated on the gum. The term was first coined by Virchow. Formerly chondromata, osteomata, myxomata, fibromata, and sarcomata were all included in the group epulis. Now the majority of writers limit the use of the term to fibromatous and sarcomatous types. According to Oliver, congenital epulides differ essentially from

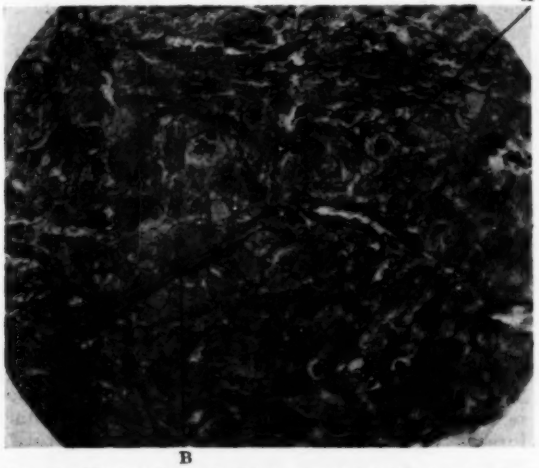

FIG. 2.—Microphotograph (high power) of the tumour near the central portion, where it is more cellular. Note: (A) the characteristic oval cell with granular cytoplasm and small round, centrally situated nucleus; (B) collagen fibres.

others, fibrous and sarcomatous, cancerous or adamantine. Kaempfer says the type of growth of which congenital epulides consist has not yet received a name. Attached to the border of the gum may be found at birth one or more tumours; Kaempfer describes them as odontoblastomata. Blair says, "It is possible that these 'congenital' tumours are of more frequent occurrence, as they are easily detached and often lost without detection." Kaempfer has collected from the literature eight cases of congenital epulides, and added one of his own.

Clinically they are congenital and are situated in the gums, either upper or lower. Out of nine previously reported cases five occurred in the upper jaw. (In my case the tumour was in the lower jaw.) Usually it protrudes from the mouth and interferes with nursing. It is more common in the female. These growths are usually small, single, and about the size of a bean. No difficulty is experienced in removing them. In one case (Füth) subsequent dentition was interfered with, as evidenced by maldevelopment of the tooth at the site of the previous tumour.

PATHOGENESIS

Although the microscopic descriptions of all the recorded cases are fairly uniform, observers do not agree on the diagnosis. Oliver is unable to determine the origin, but thinks that it is not from the enamel organ. Schorr, quoted by Kaempfer, regards the tumour as an overgrowth of the enamel organ. Kaempfer believes that these tumours arise from the mesoblastic processes which enter into the formation of the tooth. Congenital fibromata have been noted in other regions of the body—viz., in the scalp (Ballantyne), at the perineal raphé (Chiari). These cases are probably due to misplaced islands of tissue.

My best thanks are due to Dr. M. N. De, professor of pathology in the Medical College, Calcutta, for his guidance and help.

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UNSUSPECTED FOREIGN BODY IN THE GULLET

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IT is common enough for a patient to be convinced that a foreign body is impacted in the gullet, although actually there is nothing there. Far more rarely is such a body present without any history to suggest its presence. The following case report serves to emphasise the importance of a complete examination, even in cases where skiagraphic examination is negative.

A man, aged 55, complained of difficulty in swallowing solids and slight pain on attempting to do so, during six months. Fluids were taken without trouble. The onset was sudden, without warning, nor was anything known that might indicate the cause; the condition was not getting worse. Voice normal, some dyspnœa and stridor on lying down—none when up. General health good, no loss of weight; cough and "a lot of phlegm" during a few weeks only. Well-marked pyorrhœa; right posterior faucial pillar somewhat limited in movement; larynx apparently quite normal. Radiography: nothing abnormal seen on film or during the swallowing of barium bolus.

Direct œsophagoscopy.—Immediately within the entrance of the œsophagus I found a thin, triangular, very sharp scale of bone about 8 mm. each way and 1 mm. thick, with one point just sticking into the posterior mucosa. There was very slight bleeding on removal, but no ulceration could be discovered. The bone was greenish-black in colour, which suggested a prolonged stay in the situation described. No other abnormality; immediate and complete relief.

THE DIASTATIC INDEX IN ACUTE PAROTITIS

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ALTHOUGH mumps is usually regarded as a rather contemptible disease, at least by the laity, it is generally a cause of much trouble, especially to school medical officers. When the first case has only unilateral swelling, there may be even some difficulty in diagnosis.

It appears from the examination of a number of cases that there is an increase in the diastatic output by the kidney which is comparable in degree with that found in acute pancreatitis; this increase is

constantly found, is present from the second day of the disease, and may persist after the swelling of the parotids has subsided. I have examined about 60 cases, making diastase estimations at varying periods in the course of the illness. The diastase was estimated in Wohlgemuth units, but the technique was adapted to avoid geometrical progressions in the dilutions in order to get as near as possible to the actual excretion rate. The urines were all adjusted to the optimum pH, but no measures were taken to secure a uniform excretion rate of water. The failure to secure uniformity in this respect no doubt accounts for the variation found in the number of units of diastase in different samples of urine from individual cases, but in spite of this all the readings were well above 30 units per c.cm., some being over 200.

The question naturally arises: Whence is this surplus diastase derived, and does pancreatitis occur more frequently in mumps than is commonly supposed? I tested 21 of these cases by Loewi's method of instillation of 1/1000 adrenaline solution into the conjunctival sac, with completely negative results. The fæces were not tested for pancreatic activity; but if reliance can be placed on the adrenaline test, then the diastase in all probability is derived from the parotids.

Since making use of this test, I have made it a rule that no case of mumps shall be allowed to mix with others until the urinary diastase has returned to normal, which may be some days after the swelling has subsided; and I believe that this helps considerably in shortening epidemics.

MEDICAL SOCIETIES

OXFORD OPHTHALMOLOGICAL CONGRESS

THIS congress met at Oxford from July 5th to 7th under the presidency of Mr. CYRIL H. WALKER (Bristol), the Master. Among the contributions was one initiating a symposium on the

Treatment of Glaucoma

by Dr. S. HOLTH (Oslo). The first successful operation for this condition was performed, he said, in 1857, when local anæsthetics were unknown. He spoke of iridectomies before and after the use of cocaine, with miotics, the tonometer, and filtering scars. He remarked that he had now completely abandoned classical iridectomy, replacing it by iridencleisis.

Mr. G. YOUNG (Colchester) appeared as a strong advocate of non-operative treatment of glaucoma. Leaving out of consideration exceptional cases, such as low-tension glaucoma, or hospital patients who came from a long distance and returned, so that supervision was impossible, the action of pilocarpine should be tested, with the aid of the tonometer. His experience was that the cases which responded did so permanently if periodically controlled, if the strength and frequency were regulated, and if the patient was completely obedient. Much could be said in favour of leaving well alone when there seemed sound reason for believing that conservative treatment would keep blindness at bay.

Lieut.-Colonel R. E. WRIGHT, I.M.S., said that most of the cases of glaucoma met with in hospital practice in Madras were of the chronic primary variety, chiefly the non-congestive type, with markedly high tension, advanced field changes, and diminished visual acuity. In this group, if any vision remained, the patient was admitted with a view to operation, but a prior course of preparation was undertaken to reduce the tension, so that operation could be done when the tension was at the lowest possible. At the due time, instillations of ¼ per cent. solution of eserine were carried out at frequent intervals, leeches were applied on the affected side, a purge was given, and rest at night ensured. If tension tended to come down, the eserine was continued next day, but at longer intervals, massage also being practised. If the eye did not respond to several days of this, an adrenaline pack was given. This was found to cause an initial rise in tension for some hours, followed by a slow fall, which reached its lowest point on the third day. Usually this fall was not maintained more than a week, and then a rise set in, in spite of the routine eserine and massage treatment. Frequent instillations of eserine before and after the pack tended to diminish the initial rise. If the tension failed to come below 25 mm. Bailliart, Colonel Wright preferred to do an anterior sclerotomy with a Herbert's knife, and watched with operating lenses the effect on the iris vessels. If there was marked engorgement or a trace of oozing, nothing further was done at the time, and non-operative measures and repeated paracentesis were instituted. In some cases in which tension had come down to normal after non-operative treatment he had recently been trying cyclodialysis, and the results of this were astonishingly good; it seemed to be a useful, simple, and effective procedure in some of the chronic high tension cases, and it might be a safer operation than decompression in cases responding badly to non-operative treatment.

From the standpoint of treatment a second group were those of well-defined glaucoma simplex, also cases of primary glaucoma, both congestive and non-congestive, moderate in degree, in which the tension was not permanently high, but yet was never quite normal and in which there might be marked field changes, but little or no visual disturbance. In such well-marked cases careful field-taking was necessary, and tonometric observations were made, the ultimate aim being decompression. His experience of iridencleisis was that in order to obtain good results the patient must be kept under non-operative treatment for a variable time, always under observation. A third group of cases were those of early chronic primary glaucoma and glaucoma simplex, and when this condition was diagnosed it was for the surgeon to decide whether operation was called for. In hospital patients whose means did not permit of prolonged observation and non-operative treatment, decompression was advised. He did not feel so sure as some ophthalmic surgeons did that sclero-corneal trephining was the one and only effective operative treatment for all cases of chronic glaucoma, and he was inclined to employ iridencleisis more extensively, especially where there seemed reason to fear the effects of a great, sudden, and prolonged fall in the tension. Yet his impression was that sclero-corneal trephining, when well performed in suitable cases, was the surest form of decompression and best adapted to the hospital patient.

Acute congestive primary glaucoma was not common in his hospital practice. Usually for these cases the methods already mentioned were pushed, with the exception of the adrenaline pack. If the tension did not respond at once, one could employ

the intravenous injection of a 30 per cent. hypertonic solution of sodium chloride as described by Duke-Elder; but it was a slow and difficult process, and severe on the patient. In the acute secondary glaucomas of endocular inflammation, he and his colleagues, in India, depended a good deal on paracentesis if the tension was dangerously high, because of the local mydriatic treatment, or in spite of miosis. In chronic secondary glaucoma the cause of the disease was thoroughly treated. If the inflammatory process had subsided he did a broad iridectomy, having previously injected calcium chloride and horse serum. In absolute glaucoma if the eye was painful and blind it might be dealt with by opticociliary neurectomy or alcoholic block if it was desirable to retain it, but one must make sure there was no intra-ocular tumour.

Mr. J. BURDON-COOPER (Bath) said that no case of glaucoma should be operated upon until every effort had been made to quieten the eye by means of some form of conservative treatment. Morphia soothed the nervous system, causing sleep, which was a natural cure for glaucoma, and the contraction of the pupil intensified the effect of eserine.

Mr. T. HARRISON BUTLER (Birmingham) said that after iridencleisis had been done the patient might be able to leave the hospital within a week, whereas the reaction after trephining was probably the most severe of any operation on the eye. During trephining the patient usually suffered a little pang of acute pain, but there was little suffering accompanying iridencleisis. After trephining the eye was nearly always red and congested for a few days; it was exceptional for the latter to be seen after iridencleisis.

Mr. MALCOLM HEPBURN (London) remarked that if ophthalmic surgeons could be sure that non-operative methods were able to produce benefit such methods ought to be more frequently employed. His own experience had led him to conclude that when, from any cause, the tension was high, and could not be lowered by non-operative measures, an operation was needed.

Mr. ALEXANDER MACRAE (Newcastle-on-Tyne), speaking of late infection, said he had operated upon 90 eyes, and among them were three cases of late infection. In two of the cases the patients came at once under suitable energetic treatment, and the eyes were still visually useful. The third patient went so long without care that the eye was hopeless by the time she was seen. He thought it was useless to base any statistics on the results of operations after a few weeks, but if the cases were taken in which trephining had been done years before, the proportion in which tension rose after operation was high, the number in which tension had remained low for years being very small.

Necrotic Sarcoma of the Uvea

Dr. BERNARD SAMUELS (New York), who read a paper on 85 cases of this condition, said that both sarcoma and glioma showed necrosis and degenerative changes, like other tumours of the body, but though glioma underwent early and very marked necrosis there was little local reaction, while in sarcoma necrosis began later, was not so extensive, and the inflammatory reaction was very marked. Glioma, therefore, was not so toxic as was sarcoma. In sarcoma the diagnosis was easiest in the first stage, because of the great dilatation of the blood-vessels in the choroid. The bright red rims surrounding flat sarcoma was most marked on the side next to the optic nerve, due to disturbance in the circulation. With the growth of the tumour the circulation became so disturbed that a transudation of fluid occurred, and that produced detachment of the retina, this latter rendering the diagnosis more difficult. In the second stage the tumour simply grew through a small opening in the lamina vitrea, and a globule was formed, and in the third stage the tumour made its way outside in the eyeball. The fourth stage was one of metastasis, though this could occur at any stage. If there was a scleritis interna the patient had pain. The most difficult cases to diagnose were those in which the tumour was round the optic nerve, because there was an enormous detachment of the retina, and the tumours were so posterior that they could not be transilluminated. Usually the surgeon felt it was necessary to remove as much of the optic nerve as possible, but it was rarely necessary, for it was seldom that the tumour got into the optic nerve.

Mr. E. B. ALABASTER and Mr. W. STIRK ADAMS (both of Birmingham) contributed papers on

The Ears in Miners' Nystagmus

Mr. Alabaster remarked that the posture adopted by the miner in his work had been held to influence the degree of the labyrinthine responses, and in a report on the subject by the Medical Research Council it was said that miners' nystagmus varies directly with the amount of labyrinthine disturbance and inversely with the intensity of the illumination present. Yet the labyrinthine condition had never yet found general favour as an ætiological factor. Mr. Sydney Scott had reported a series of 40 cases of the disease in which the nystagmus was unlike that usually found, as the to and fro movements were equal in speed, instead of one movement being slow and the other a jerk. The most persistent symptom of miners' nystagmus was giddiness which was brought on by movement, and it persisted when the eyes were closed. Patients frequently said they never went out at night for fear neighbours might say they were drunk. The ears of miners might be affected by changes of pressure as much as those of men in the Air Force, and certainly deafness was very common among miners. Of 14 men examined, 11 had definite reduction of hearing acuity, and the remaining 3, tested more minutely, were found to have abnormal labyrinthine responses. The sequence of events seemed to be: a catarrhal condition in the nose; extension of infection along the Eustachian tube; a congestive condition of the middle ear; confusion arising from an antagonism between the two labyrinths; an attempt to obtain cerebral adaptation by means of vision; frustration of this attempt by the poor illumination; fatigue of the elevator muscles; then nystagmus. A related fact was that a pigeon, both of whose labyrinths had been destroyed, could no longer feed itself if corn was strewn on the ground, it could only do so when the food was placed in a container. He hoped that otologists would have greater facilities than in the past for studying these cases.

Mr. Adams spoke of a descent of a deep colliery which he made with Mr. Alabaster, when they saw and examined 14 men, chiefly in respect of their auditory powers; 12 of the 14 had a definite lesion of hearing. One was quite deaf for ordinary purposes, and was proved to have mixed deafness—i.e., of both middle ear and perception character. Two of the men, however, had normal hearing, and therefore they were crucial cases from the point of view of this inquiry. On testing them by the galvanic and the cold caloric tests they did not give the normal responses; if they had done so he would have regarded this line of inquiry as at an end. The Eustachian

tube was an important structure in this connexion, and the question arose as to whether deafness was a part of the problem. He did not think it could be excluded.

Mr. SYDNEY SCOTT (London), though he had not seen a case of miners' nystagmus, felt that this line of research was likely to be fruitful, and that a coöperation between otology and ophthalmology should result in a means of prevention and successful treatment of this distressing malady. It was to the ophthalmic surgeon one must look for the material for the research. He made a plea for exactitude of terminology. He remarked also on the minute anatomy of the semicircular canals.

Mr. J. R. FOSTER (West Hartlepool) remarked on the great variability of the hearing power in cases of nystagmus, and said it would be valuable to be told what were to be regarded as normal labyrinthine tests. Something depended, too, on the thickness of the skull bones generally, including the labyrinth walls; in one man with a very thick skull the response to the cold caloric test was only tardily commenced.

Mr. HARRISON BUTLER commented on the absence of controls in this inquiry, though he was glad to see that this aspect of the question was being tackled. There might be some subtle poison at work in these cases of miners' nystagmus.

In reply Mr. ADAMS said that the central cerebral mechanism was important, and Mr. ALABASTER remarked that he could not understand why giddiness should be so pronounced on stooping in patients with miners' nystagmus unless the labyrinth was at fault.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

THE nineteenth annual conference of this association was held at Cardiff from July 13th to 15th, the main subject for discussion being the part played in the production of tuberculosis respectively by (1) infection and (2) environmental conditions.

Introductory Address

In his introductory address the president, Sir ROBERT PHILIP, pointed out that the development of tuberculosis predicated not only the presence of the infecting bacillus, but also the existence of certain conditions favourable to its germination. Given those factors, the spread of the disease within the system would follow. The laboratory animal commonly developed tuberculosis after inoculation because of the relatively large dose administered, although even then the course of the disease thus artificially produced might be varied by varying external conditions. In the human subject the course of events was more complex, depending on the widely varying dosage and the equally widely varying resistance offered by different individuals and by the same individual at different periods. The variations in the soil on which the bacillus had been implanted were themselves largely influenced by environmental conditions. The speaker had long held that one of the primary functions of the family physician should be to determine carefully—by the application at successive intervals of one or other of the tests that were now available—the earliest evidence of infection. It was, however, equally important to study with minute care the environmental conditions to which the individual was, or might be, subjected. The contributory causal factors in tuberculosis included all influences which, however they might be brought into play, tended to handicap the individual in his struggle against the invading bacillus. The circumstances which favoured invasion by the tubercle bacillus were extremely complex, and the purpose of the discussion was to get hold of them and as far as possible assess their several values and relationships.

Lord DAVIES, president of the Welsh National Memorial Association, followed with an address on the history and organisation of the association, pointing out that the scheme was a comprehensive one, and one which endeavoured to lay stress upon the preventive no less than upon the curative side of the work. It served a unit of about two and a half million people, so that the staff of the association was able to concentrate the results obtained over a considerable area, and to provide adequate means for investigation in the institutions under their control.

Prof. S. LYLE CUMMINS, occupying the chair of tuberculosis in the University of Wales, dealt with the place of a tuberculosis department in the life of a medical school, showing how it linked up with research and undergraduate and post-graduate teaching.

Dr. D. A. POWELL, principal medical officer of the association, described in more detail the working of the King Edward VII. Welsh National Memorial association. He said there were many advantages in a national scheme such as this. It was administratively very convenient, it was undoubtedly economical, it fostered team work and team investigations—in which connexion might be mentioned the Memorial Association's inquiry into the incidence of silicosis amongst coal workers—and it pooled the financial resources of the contributing authorities. It combined, moreover, the advantages natural to a voluntary organisation with those inseparable from a State- and rate aided service. It might be claimed that its appeal was even wider—that it had united a nation in a campaign against a disease to which she was peculiarly vulnerable and which had always taken the heaviest toll of her children.

The Part Played by Infection

Dr. RALPH M. PICKEN, medical officer of health for Cardiff, said that if it was accepted that direct infection from person to person was the principal factor in the causation not only of respiratory tuberculosis but also of other forms of the disease acquired via the respiratory route, it was evident that it was not only the main cause of death and disablement from tuberculosis, but also the essential factor in the continuance of the disease, since it constantly propagated new centres of infection. Although the recognisable case of tuberculosis, against the risk from whom their ad-hoc schemes were directed, was clearly in himself a greater danger than the unrecognised, and there was some evidence that the decline of the recorded incidence of pulmonary tuberculosis during the past 15 years was the result of the increasing completeness and efficiency of those schemes in procuring the early detection and detention of infected persons, and the segregation in hospitals of the incurable and rapidly progressive cases, there was, he thought, some ground for believing that undetected carriers of infection were numerous, that they might be increasing in number, that there was not likely to be much advance in methods of ascertaining them, and that, even if they were found, the problem of rendering them harmless presented almost insuperable social and administrative difficulties.

It was fair, he believed, to conclude by analogy with the epidemiology of the other air-borne infections and from the observed facts as to the occurrence of tuberculosis itself, that the essential cause of tuberculosis—i.e., infection by the tubercle bacillus—could not be eradicated by administrative measures, or public education, or medical skill, in a community among whom the disease had become endemic. This, however, did not mean that clinical tuberculosis would not continue to diminish in severity or in incidence or in both. If he was right in supposing that there was much undetected infection, environmental conditions favourable to its spread were of great importance. The prime factors in the causation of tuberculosis were: poverty, principally through its effect upon nutrition; deficiency of diet; and overcrowding. Meteorological conditions had not proved to be of great importance except in so far as an inclement climate drove people indoors.

At the afternoon session Dr. L. S. T. BURRELL (London) discussed the theory that ordinary tuberculosis of the lung, or the so-called adult type, was not a new infection caught from some other patient, but was a reactivation of old disease contracted in childhood—an endogenous rather than an exogenous infection. He thought this theory was partly true, but it left many facts unexplained. No one would deny that a tuberculous focus might exist in the body without producing any impairment of health, and that after lying latent for many years such a lesion might break out and cause active disease, but this did not prove that exogenous infection could not also occur. He believed that tuberculosis might spread in one or more of four ways: (1) By direct spread from the lesion to surrounding parts; (2) by infection or reinfection from outside; (3) by endogenous spread from a lesion in the body through the lymphatics; (4) by endogenous spread through the blood stream. In his opinion, the majority of cases of adult tuberculosis were the result of an endogenous spread from some previous lesion, but quite a considerable number were due to reinfection, and he regarded it as dangerous to expose anyone of whatsoever age to a massive infection.

The Part Played by Environment

Dr. G. C. M. M'GONIGLE (M.O.H., Stockton-on-Tees), speaking on environment and tuberculosis, gave a warning against the indiscriminate re-housing of families living in poverty, illustrating his remarks by the results of a survey carried out not long ago in Stockton-on-Tees. Here a re-housed section of the population showed a 50 per cent. increase in the death-rate in the five-year period after their removal to hygienic surroundings with immeasurably improved housing conditions. The increased death-rate was seen in the number of deaths from measles, cancer, heart conditions, bronchitis, and pneumonia. It had been shown almost beyond any shadow of doubt that the increased death-rate was definitely correlated with a diminished expenditure on food, the speaker concluding by saying that it was obvious that if good environmental conditions were obtained only at the expense of a reduction of food purchasing power far below the safety line, the advantages obtained from good housing would be more than outweighed by nutritional depreciation, with a resulting adverse effect upon tuberculosis.

Dr. WILLIAM G. SAVAGE (County M.O.H., Somerset) confined his remarks to tuberculous infections in which the bovine tubercle bacillus was implicated. The high incidence of tuberculous infections in dairy herds, which could not be put below 40 per cent. as a whole, indicated that factors were at work reducing the natural resistance against tuberculosis in the bovine species. These factors included the severe continued drain to which a cow was subjected under economic conditions, 2000 gallons of milk being yielded yearly where a wild cow under natural conditions gave only about 150 gallons a year. Faulty feeding and faulty environmental conditions were other factors, a fourth factor being the continued prevalence of sources of infection. He did not look upon the bovine bacillus as any less virulent to man than the human type, and though it did not seem probable that human environmental factors played much part in affecting the amount of bovine tuberculosis disease, he suggested that much more knowledge was needed as to the factors which influenced infection in man from tuberculous milk.

Dr. NOEL D. BARDSWELL (principal assistant medical officer, L.C.C.) emphasised the supreme importance of environment in raising and maintaining resistance to tuberculosis, as exemplified in sanatoria generally and in village settlements, such as those of Papworth and Preston Hall. The effect of bad environmental conditions, mainly in the prevalence of long hours of work and insufficient rest, was seen in the lack of resistance to tuberculosis shown by young women workers in London.

Dr. F. C. S. BRADBURY (assistant tuberculosis officer, Lancashire County Council), in a statement regarding the association's inquiry into the high incidence of tuberculosis in the Tyneside area, explained that an attempt had been made to include within the scope of the inquiry as many factors as possible which might have a bearing upon tuberculosis, provided they appeared capable of correct ascertainment within a reasonable time. Three factors appeared to be principally concerned in the high incidence of tuberculosis in Jarrow: under-nourishment, overcrowding, and a relatively high susceptibility of the population to tuberculosis. These three characteristics probably played a part in favouring tuberculosis in other parts of the country also, and in view of their importance the speaker proceeded to analyse each, to bring out in what way they were implicated in the causation of tuberculosis. With regard to under-nourishment, details had been studied in respect of particular foodstuffs, and it was clear that tuberculous families consumed per head less meat, butter, and fresh milk (and more bread) than non-tuberculous families; and that of these four foodstuffs, insufficiency of milk showed the closest relation to tuberculosis. With regard to overcrowding, the evidence submitted definitely showed this to be an important causal factor of tuberculosis in Jarrow, where the overcrowding occurred largely in unwholesome tenement dwellings. Individual susceptibility as a third cause was brought out very clearly in the Tyneside inquiry, mainly in a comparison between the case-mortality among the Irish and among the English when living under closely comparable conditions. It was clear that something more than environment was involved, in view of the greater case-mortality among the Irish, and there appeared to be conclusive evidence that the missing factor was a greater susceptibility of the Irish than of the English to tuberculosis.

Some Local Inquiries

Dr. HERBERT D. CHALKE (assistant tuberculosis physician, Welsh National Memorial Association) gave a brief résumé of a report recently submitted to the medical committee of the King Edward VII. Welsh National Memorial Association regarding an

investigation into the causes of the continued high death-rate from tuberculosis in certain parts of North Wales. It was noticeable that in certain Welsh counties the decline in the tuberculosis death-rate was not taking place as rapidly as in the country as a whole, the death returns further showing that the disease was unequally distributed over the different districts within those counties. Thus, although Carnarvonshire had the highest tuberculosis death-rate in Wales, in one of its districts—Gwyrfai—the rate was more than double that of the whole county. Analysing the conditions obtaining at Gwyrfai, the speaker said that the district was mountainous, and had a heavy rainfall; the soil was deficient in calcium, and the subsoil impervious; housing and sanitation fell below normal standards; most of the dwellings were damp; the dietary of the people was deficient in fresh meat, green vegetables, fruit, and milk; tinned foods, bacon, and tea being consumed to excess. There was little outdoor recreation, and frequent meetings in overcrowded poorly ventilated chapels provided further opportunities for the spread of the disease. Such factors favoured the maintenance of the tuberculosis death-rate at a high level, but many of them were capable of elimination, which should result in a marked diminution in the incidence of the disease in that part of Wales.

Miss CICELY MILNER (secretary, Paddington Tuberculosis Dispensary) described an inquiry now being carried out in Paddington with regard to the environment in which every patient who had passed through the hands of the tuberculosis dispensary workers had lived or was still living. By means of the same statistical cards they were able to tabulate the percentage of success they had achieved in their efforts to improve the environmental conditions of their patients, and also the amount of coöperation and response their efforts had received. Among a number of interesting points elicited in this still uncompleted inquiry was the fact that few of the young adult cases had come under the care of the dispensary as children; and also that only an extremely small percentage of delicate children and children from infected homes who attended the open-air school in the borough of Paddington had developed active pulmonary tuberculosis in later life.

Dr. W. T. MUNRO (Glenlomond Sanatorium) said that two factors concerned in invasion by the tubercle bacillus were relatively fixed quantities—the host and the bacilli—and the effects should proceed along well-defined lines. But throughout the life of the infected individual a third factor, environment, would always be operative and might shape the whole pathogenesis of disease. The speaker briefly reviewed some of the environmental factors in disease production, including the occurrence of pulmonary tuberculosis as a sequela of other debilitating diseases, and the effects of trauma and of defective nutrition.

Dr. T. W. WADE (medical officer, Welsh Board of Health) gave a number of statistics as to the occupational mortality from respiratory tuberculosis in Wales, showing among other things that the four counties of highest mortality-rates were four western counties, and that of the six counties of lowest mortality-rates five were coal mining. Two counties, Caernarvon and Merioneth, showed high death-rates in young adult life for males and females, and both exceptionally heavy late age mortality-rates for males, the latter being due to the slate and stone industries in each of those counties. Although the death-rate in the coal-mining counties from respiratory tuberculosis was low—as was the case in other coal-mining areas throughout the world—the death-rates from bronchitis and other respiratory diseases were high. Dr. Wade added that persons exposed to injurious dusts not only inhaled the dusts but also swallowed them, and generally those occupations exhibiting high mortality-rates from respiratory diseases resulting from exposure to injurious dusts also exhibited high mortality-rates from cancer of the stomach.

Miss K. L. BORNE, S.R.N. (matron, Papworth Village Settlement), had analysed particulars of the home conditions of 50 women patients, aged 16 to 25, undergoing treatment in a sanatorium. A high percentage of these patients came from poor homes with overcrowded conditions which directly favoured infection. The decrease in the incidence of tuberculosis could be attributed to many factors, such as the education and assistance provided by the numerous State, municipal, and private organisations, better housing and slum clearance, and village settlements which provided means of livelihood with continued after-care for patients and their dependents.

Housing Conditions

Dr. R. J. PETERS (senior assistant M.O.H., Glasgow), discussing the question of housing in relation to tuberculosis, showed the effects of housing conditions in Glasgow upon the incidence of both pulmonary and non-pulmonary forms of the disease. After analysing various statistics on this point he drew the following conclusions. Tuberculosis was more frequent (by 65 per cent.) as a recognisable disease among the occupants of small houses than among those more favourably situated. The difference in fatality was even more marked (341 per cent.). The factors responsible for this were principally those associated with poverty generally and a lower standard of life, the specific influence of overcrowding being much less than might be expected. With regard to cases of traceable familial infection, the size of the house and overcrowding did not appear to have a marked influence in their production. The speaker insisted, however, that specific study and application of new discoveries in the epidemiology, immunology, and treatment of tuberculosis must go hand in hand with general measures of social amelioration.

Mr. J. E. TOMLEY (clerk to the Montgomeryshire Insurance Committee) showed charts illustrating the tuberculosis mortality-rates for each urban and rural district of the counties of Caernarvon and Merioneth during the six-year period 1925–30. It was through the disclosures made by these charts that the council of the Welsh National Memorial Association entrusted to Dr. Chalke the duty of making a detailed investigation into the causes of the continued high death-rate from tuberculosis in those parts of North Wales.

Dr. H. MIDGLEY TURNER (clinical tuberculosis officer, Sheffield) said that because the results of infection under bad environmental conditions in children were not so soon obvious, there was in some quarters a tendency to disparage organised and intensive work among such children. The consequence of bad environmental conditions for children was to allow the development of large reservoirs of living tubercle bacilli within the child's lymphatic system, and when adolescence was reached and the retentivity of the lymphatic system for tubercle bacilli was impaired, serious infiltration pulmonary tuberculosis was liable to develop. The childhood period when parenchymatous pulmonary infiltration was uncommon should be thankfully accepted as a breathing space in which work could be done to prevent the occurrence of sputum-positive tuberculosis later.

REVIEWS AND NOTICES OF BOOKS

A Text-book of Midwifery in the Tropics

By V. B. GREEN-ARMYTAGE, M.D., F.R.C.P. Lond., F.C.O.G., Professor of Midwifery and Gynæcology, Calcutta Medical College; and P. C. DUTTA, M.D., F.R.C.S., D.G.O., Captain, I.M.S. Calcutta: The Book Company. 1933. Pp. 306. 10*s.* 6*d.*

IN the foreword to their text-book on midwifery in the tropics Dr. Green-Armytage and Dr. Dutta point out that every problem of diagnosis and treatment is altered for the doctor who goes from England to practise obstetrics in the East. They have provided a guide in the form of a synopsis dealing concisely but thoroughly with pathology, symptomatology, and treatment. Most of the information is the same as that given in the ordinary English text-book, but certain subjects are dealt with more fully than is thought necessary in a book of this size for use in England. Such subjects are obstructed labour, ruptured uterus, and puerperal sepsis, which are commoner and more serious problems in the East. Tropical diseases such as kala-azar, malaria, dysentery, and sprue are given among the complications of pregnancy; and osteomalacia, exceedingly rare in England, is mentioned as being fairly common in Northern India. Pelvic contraction is very well discussed, and this section is illustrated by diagrams showing methods of estimating the amount of disproportion between the fœtal head and the pelvis. Detailed instructions are given for the performance of all necessary obstetric operations, the methods described being those particularly suitable for the tropics. The book can be commended to those practising midwifery in the East.

Light Therapy

By FRANK HAMMOND KRUSEN, M.D., Director of the Department of Physical Medicine, Temple University School of Medicine, Philadelphia. With foreword by JOHN A. KOLMER, M.D., Dr.P.H., D.Sc., Professor of Medicine, Temple University School of Medicine. New York: Paul B. Hoeber. 1933. Pp. 186. $3.50.

Dr. Krusen's handbook is concise and readable. It gives an accurate, clear account of our knowledge of the clinical applications of ultra-violet and infra-red radiations. The descriptions of apparatus employed and the illustrations are excellent, and the section dealing with physical considerations is adequate. The physiology of the subject receives less space than it deserves and this part could well have been enlarged at the expense of that dealing with the technique of administration. First-hand knowledge of apparatus, used under expert guidance, remains the only satisfactory way of acquiring technique. In the clinical section diseases are grouped under the heading of systems. Long lists of various conditions for which radiations have been prescribed are appended, and the author points out those conditions which are more generally recognised as suitable for radiation treatment and are known to benefit from this treatment. The reader will agree with Prof. Kolmer, who has written a preface to this handbook, that Dr. Krusen has not overstated the case, and that in his anxiety to avoid undue enthusiasm "he has been a bit too modest in evaluating light therapy in terms of his own experience." The section dealing with local irradiations does not stress sufficiently the need of varying dosage according to the condition treated. It is regrettable that the Finsen-Reyn method of treating lupus should receive so little notice; its cosmetic results are considered by many experienced workers to be superior to those obtained by the use of other lamps.

Dr. Krusen's book contains a good index and a very complete list of references.

Diphtheria Immunisation—Propaganda and Counter Propaganda

Compiled by J. GREENWOOD WILSON, M.D., M.R.C.P., D.P.H. Preface by J. GRAHAM FORBES, M.D., F.R.C.P., D.P.H. Dewsbury: Joseph Ward and Co. 1933. Pp. 117. 2*s.* 6*d.*

THIS pamphlet is essentially a record, round by round, of a fight between the medical officer of health of Dewsbury and the antivaccinationists when diphtheria prophylaxis was introduced into the borough. The medical reader will side with the medical officer of health, but will have to admit that the opponents' sallies sometimes tell. At any rate, both sides show good temper, courtesy, and a sporting spirit. Though the main title of this little book is Diphtheria Immunisation, its subtitle, Propaganda and Counter Propaganda, is the more descriptive of its contents. Science and advertisement are brought together in a rather provocative way. We may be convinced of the purgative property of pills, yet may find it difficult to fill in the steps which prove them worth the price charged for them. "The first essential in propaganda," says Dr. Wilson, "is pithiness," and what follows has, on both sides, this and other merits of good propaganda; but the section of the book which deals with diphtheria immunisation suffers from undue compression; something may be claimed for the point of view of that friend of St. Augustine "who being a most diligent and acute inquirer in difficult subjects . . . hated exceedingly a brief answer on a great question."

The record is interesting to read. It gives a popular but on the whole accurate account of diphtheria prophylaxis, it provides a good model of effective public health propaganda, and last, perhaps best, it gives a vivid picture of an energetic and enthusiastic M.O.H. at work. It is such men as Dr. Wilson who get things done in matters of public health.

Blood Pictures: an Introduction to Clinical Hæmatology

Third edition. By CECIL PRICE-JONES, M.B. Lond. Bristol: John Wright and Sons. 1933. Pp. 73. 6*s.* 6*d.*

"An opinion of a blood specimen should never be formed from only one or two characteristics, but, as far as possible, from all the aspects of a complete blood picture." This statement by such an authority as Dr. Price-Jones should be remembered in the face of present-day tendencies to automatic diagnosis and to the drawing of wide deductions from the examination of stained films alone. This book gives a clear and concise demonstration of the value in diagnosis of a complete examination of the blood picture. Dr. Price-Jones has definite views on the

limits of the help obtained from this source alone; only in those conditions known as "blood diseases" should a diagnosis be based on a blood picture, irrespective of other signs and symptoms. Keeping his feet firmly planted on the rock of established fact, Dr. Price-Jones gives precise details of diseases in which the examination of the blood may be of some assistance. His scheme for the reports on blood examination and the method of demonstrating the deviations from normal might well be generally adopted. Both clinicians and laboratory workers should study this book, the former in order that by unreasonable demands they may not lead their pathological advisers into uncharted waters, and the latter to learn how best the information garnered from a complete blood examination may be set out.

La phrénicectomie

By L. BÉRARD, Professeur de Clinique chirurgicale à la Faculté de Médecine de Lyon; F. DUMAREST, Médecin en chef du Sanatorium Mangini à Hauteville; DESJACQUES, Chirurgien des Hôpitaux de Lyon. Paris: Masson et Cie. 1933. Pp. 114. Fr.30.

THE pleasurable anticipation with which one opens a book on this subject from these authorities is fully realised in the reading. Prefatory chapters on the anatomy of the nerve and the anatomical variations and on the physiological basis for phrenicectomy are followed by an account of the technique. The authors prefer the operation of evulsion of the nerve, which is described and illustrated in detail. In certain cases, however, such as pleurisies, empyemas, those in which a superficial lung lesion close to the mediastinum is suspected, and those in which great resistance to evulsion suggests that the nerve is caught up in mediastinal adhesions, the radical operation of Goetze is preferred. The chapter on incidents, accidents, and complications serves to remind the reader that phrenicectomy is not an operation entirely devoid of immediate risks or of post-operative sequelæ. The two succeeding chapters on the "post-operative cure" and the "mode of action" of the nerve are highly instructive, as is also the one on "indications." This last is, however, curiously incomplete. The value of phrenicectomy in the treatment of various symptoms, such as the dragging pains and aches of pleurisies, of the irritating diaphragmatic cough due to adhesions, of palpitations due to pleuropericardial adhesions, and even of dyspnœa of a certain type and of vomiting, are almost overlooked. On the other hand, in the comparison of phrenicectomy with artificial pneumothorax, the comparative merits and disadvantages of either method, and the indications for the nerve operation in place of artificial pneumothorax are well brought out. It is a pity that although the authors have observed nearly 700 cases of phrenicectomy, no attempt has been made to classify them or to show the proportion of successes and failures, both as regards the paralysis of the diaphragm and the late clinical results of the operation.

British Journal of Children's Diseases

To the April–June issue (Vol. XXX.) Dr. Catherine Chisholm contributes a paper on the Incidence of Rickets in Manchester, where she shows there is a considerable average percentage (7·5) of severe rickets, varying with the different areas of the town and different periods of the year in children not under welfare supervision. A further number up to 21 per cent. of the infants are on the borderline of vitamin deficiency showing at times slight evidence of rachitic changes. The peak of the incidence of rickets occurs at the end of spring or early summer, but may fall much later in the year than is generally expected. The fall in the incidence in the late autumn in Manchester is considerable compared with the amount of radiation at that time and is probably due to the cumulative protection afforded by summer and autumn sunshine. Dr. Chisholm thinks that the incidence of rickets under present conditions of infant welfare mainly depends on the capacity of the mother for motherhood and urges that potential mothers should be trained in child care and dietetics. —In her paper on the Aspiration Treatment of Laryngeal Diphtheria, Dr. Olga F. Tregelles describes her experience of this method which has been in use at the North-Western Fever Hospital for the last two and a half years. The series of cases though small supports the conclusions of the American observers in showing that the incidence of operation for laryngeal diphtheria is less if aspiration is performed and that the death-rate following operation is also less.—Dr. L. J. M. Laurent reports a case of Extensive Purpura Simplex following Measles. The patient was a male infant aged 8 months, who on the twentieth day of a mild attack of measles developed extensive purpura of the face, arms, and thighs, without any hæmorrhages from the mucous membranes. No improvement followed intramuscular injection of antistreptococcal (scarlatinal) antitoxin, but 24 hours after intramuscular injection of 50 c.cm. of fresh uncitrated blood from the mother the lesions ceased to extend and in six days entirely disappeared. The case is remarkable for the comparative rarity of purpura following measles, the absence of thrombocytopenia, and the rapid disappearance of the lesions after injection of maternal blood.—Dr. W. Gunn records a Case of Rubella Complicated by Purpura Hæmorrhagica. The patient was a girl aged 9½, who had been subject to mild attacks of epistaxis since the age of 4 years. Her mother had had similar attacks from her eighth to fourteenth year, but the rest of the family, consisting of the father, three brothers, and a sister, had never had any hæmorrhagic symptoms. On the third day of disease petechiæ appeared in each supraclavicular and antecubital fossa and were succeeded by severe attacks of epistaxis. Recovery ensued after intramuscular injection of 20 c.cm. of hæmoplastin, followed a few hours later by 50 c.cm. of the mother's whole blood. In the onset of the purpura directly after the decline of the rubella rash, the thrombocytopenia, and the prolonged bleeding-time the case closely resembled that published by Pitten, the only other example on record of rubella complicated by purpura hæmorrhagica.—Dr. E. W. Goodall reports a Case of Scarlet Fever followed by Meningeal Hæmorrhage. The patient was a boy aged 9, in whom symptoms of meningeal hæmorrhage developed a month after a mild attack of scarlet fever. Death preceded by convulsions took place on the third day. The necropsy showed extensive subdural hæmorrhage on the left side extending from about one inch in front of and behind the fissure of Rolando and a slight hæmorrhage in a similar position on the other side. Apart from two small hæmorrhages on the epicardium and aorta the other organs were normal. Dr. Goodall had never seen or read of a similar case.—The abstracts from current literature are devoted to treatment.

CONSTRUCTION AND MAINTENANCE OF INSTITUTIONS. The Minister of Health has appointed Dame Janet Campbell, M.D., and Miss F. Barrie Lambert, M.B., to be additional members of the Departmental Committee which is to consider and report on the cost of construction and maintenance of various classes of public buildings provided by local authorities. (See THE LANCET, July 15th, p. 14.)

THE LANCET

LONDON: SATURDAY, JULY 22, 1933

MEDICAL PARTNERSHIP IN THE U.S.A.

THE Bureau of Medical Economics of the American Medical Association has recently published [1] a study of "private group practice" in the United States, based upon the replies made to a questionnaire sent to 1949 secretaries of county medical societies. "Group" in this inquiry designated three or more physicians who had joined for practice and who owned certain kinds of equipment and employed lay assistants in common. The description is admittedly very indefinite and, in fact, classification depended upon a number of details of organisation and operation. The looseness of definition naturally results from the fact, shown by the inquiry, that there exists in America no clearly defined or standardised type of group practice. Only in a minority of instances was there found a body of selected specialists, with adequate scientific equipment, which could be regarded as constituting a fairly comprehensive medical unit, capable of offering a "complete medical service," although at times exaggerated claims for group practice have been based on the presumption that such comprehensive groups are typical.

It was noted that a disproportionately large share of the 239 groups, which were studied in some detail, were concentrated in the smaller cities, cities with a population of under 50,000, which may in part represent an effort to meet in such places a lack of laboratory and hospital facilities. Also it is not unlikely that greater publicity and prestige may be attached to the formation of a group in the small town rather than in the metropolis. The average size of the groups proved to be six, though nearly two-thirds of them consisted of three, four, or five members. In recent years the figures collected suggest that their size has tended to decline, and there has been, as well, a slowing up in the rate of formation of new groups. This, it is thought, may well be related to the extremely rapid growth in hospital and laboratory facilities during the last decade so that a much larger percentage of individual physicians can obtain access to these without the necessity of forming a group, and can thereby give service in no important way differing from that given by even the best organised and equipped groups. A very large percentage of the groups included a member specialising wholly or partially in surgery, about half included a specialist in internal medicine, and less than one-half reported general practitioners as members. There is, therefore, little tendency for groups to organise around general practitioners, while the preponderance of surgeons raises the question, the Bureau suggests, "of whether there may not be some justice in the charge sometimes made by critics of group practice that many groups are formed only to act as 'feeders' for successful surgeons." The data suggest that there is an increasing tendency to include dentistry as one of the specialties of group practice.

In distribution of income among members the forms most commonly observed were on the basis of fixed percentages, equal divisions or salaries, and in relatively few cases were incomes determined by individual earning. One of the questions most frequently raised in regard to group practice is whether pooling of the expense for equipment and operation reduces the percentage of gross income expended for these purposes. Information supplied by 142 groups showed that the net income distributed to physicians averaged about 60 per cent., and there was no indication that increasing the size of the group reduced the overhead charges relative to income. Comparison of these results with those of a study of incomes and expenses in individual practice led to the conclusion that from 7 to 9 per cent. *less* of the money paid by the patient goes to the physician in group than in private practice, which confirms the opinion of a majority of secretaries of the county medical societies that group practice does not afford a method of reducing the cost of medical care. There is apparent, therefore, no support to the argument that has been advanced, based on commercial analogies, that greater economy of operation and resulting superior competing power must inevitably cause group practice gradually to supplant individual practice.

[1] Jour. Amer. Med. Assoc., 1933, pp. 1605, 1692, 1773.

THE INHERITANCE OF BLINDNESS

A REPORT [1] on hereditary blindness by the Prevention of Blindness Committee, in the preparation of which the late Mr. J. HERBERT FISHER took a large share, lays stress on the danger of assumptions that may not be warranted by the facts. The eugenist is apt to argue that any person known to be blind from a disease in which heredity is a factor in its causation should never become a parent, but this, the committee opines, is going too far, and it proposes instead these two principles:

(1) If a member of a stock in which there is definitely inheritable disease causing blindness, even if the disease is not manifest in his or her case, marries, he or she should be strongly urged to consult an ophthalmologist who, with the assistance of a pedigree, would advise as to abstention from parenthood.

(2) Unless there is medical evidence to show that the case does not fall within the hereditary class, a blind person contemplating marriage should seek the advice of a competent ophthalmologist before marriage, in view of the complex nature of the problem and the serious handicap imposed upon

[1] Standing Committee of the Union of Counties Associations for the Blind, 66, Victoria-street, London, S.W.

the children of persons suffering from inheritable eye disease. The ophthalmologist will no doubt obtain a pedigree, and if necessary consult a genetic expert.

The committee argues that a consultant is not justified in giving definite advice against parenthood unless his opinion on the disease, qua disease, is reinforced by the evidence of a pedigree applying to the particular case. We have no sufficient knowledge concerning the extent to which diseases of genetic origin may occur sporadically, and although some pedigrees can be cited showing a large proportion of the descendants of one man or woman blind—for instance, from retinitis pigmentosa—yet there are other instances of the disease in which no hereditary factor can be proved. On the other hand, it is sometimes possible for an ophthalmologist in consultation with a genetic expert to state, for any individual whose case has been correctly diagnosed and whose family history has been carefully investigated, the degree of risk of blindness in succeeding generations which parenthood would involve. There are a large number of diseases which may cause blindness in which heredity is a factor. The two most important are retinitis pigmentosa and hereditary optic atrophy (Leber's disease). In these the mode of inheritance is very different. Retinitis pigmentosa, though rather commoner in males, may occur in either sex, and may be inherited through either. Leber's disease is practically confined to males, although it is inherited almost exclusively through females. Hence a male of adult age belonging to a stock in which Leber's disease exists, if he himself is exempt, is very unlikely to transmit it. There are a number of other diseases which may cause blindness or weak sight in which heredity is a factor of greater or less importance. Such are albinism, aniridia, congenital and lamellar cataract, coloboma of the iris and choroid, and many others, including glioma of the retina.

The report calls for better statistics of any family in which such diseases are met with, and an appendix gives the particulars required for drawing up a pedigree. This requires enthusiasm and boundless patience in the investigator, such as the late EDWARD NETTLESHIP gave to it during the latter part of his life. His Bowman lecture of 1909 includes pedigrees of congenital cataract, retinitis pigmentosa, Leber's disease, albinism, and total colour blindness which have served as a model to succeeding investigators. Not all of these conditions involve certifiable blindness, but for the purpose of any such investigation partial blindness should be included, and from the point of view of the committee pedigrees in which only one individual is affected are just as important as those in which several are. Even in such diseases as senile cataract and glaucoma there may be an hereditary factor in the causation, and the rôle of heredity in myopia is now well recognised. There is no reason to believe, however, that myopia in which the hereditary factor is strong is more likely to cause blindness than myopia in general.

TUBERCLE OF THE NERVOUS SYSTEM IN CHILDREN

THE extreme variability of the clinical picture of cases summarised as "tuberculous meningitis" is well recognised by clinicians. While in general this diagnosis is attached to those in which signs of cerebral irritation are many and focal signs are few, yet it is not uncommon for a child which at one time presented some clear-cut localising signs of cerebral disease to show, post mortem, evidence of widespread tuberculous involvement of the brain. Exceptions of this kind complicate the important differential diagnosis between cerebral abscess and tuberculous meningitis, and at a time when the valuable assistance afforded by the chloride content of the cerebro-spinal fluid was not available, patients sometimes underwent operations from which little could be expected.

The inconstant clinical picture is naturally dependent on pathological changes whose distribution and nature are also very variable, and which are inadequately represented by the term meningitis. Drawing from a material which appears to be richly provided with tuberculosis in the young, Prof. V. P. JOUKOVSKY and Prof. V. N. ROUSSKIKH, of Smolensk, have compiled an instructive monograph [1] on the various tuberculous manifestations which they have observed in the nervous system. The value of this work is much increased by the fact that detailed accounts of the clinical course of the disease appear in conjunction with the histological descriptions, and can easily be related to them. They show very clearly that tuberculous involvement of the nervous system is by no means confined to the meninges of the brain and to the choroid plexus; that the typical meningeal form is prone to invade the spinal meninges; also that focal areas in the brain substance are often affected, whether by thrombosis, miliary tuberculous infiltration, or the formation of tuberculomata. These findings recall the interesting observations of A. R. RICH and H. A. MCCORDOCK,[2] which suggested that diffuse tuberculous meningitis is not a direct result of blood-borne infection, but arises from discharge of tubercle bacilli into the cerebro-spinal fluid from adjacent caseous foci.

The first section of the monograph is devoted to the classical form of the disease: a leptomeningitis associated with marked involvement of the choroid plexus. The presence of tuberculous changes in the spinal meninges of these cases is well demonstrated, and it is suggested that the condition is characteristic of childhood, considering how rarely it was found by A. GHON and others in adults. In the next section a "meningo-thrombotic type" is described, in which thromboses, mainly in vessels supplying the subcortical areas, are associated with hæmorrhages and necrotic foci. It is pointed out that the thrombosis is not merely a terminal event, as it may be in marasmus and other cachectic states, but follows

[1] Acta Pædiat., 1933, vol. xiv., Suppl. II.
[2] Bull. Johns Hopkins Hosp., 1933, lii., 5; see THE LANCET, 1933, i., 651.

on a tuberculous arteritis with thickening of the adventitia. In the third section cases of the "mixed type"—meningitis accompanied by miliary tubercle of the brain—are described. The combination of general signs of meningeal irritation and focal signs such as localised rigidity are clearly correlated with the post-mortem findings, which are admirably illustrated by photographs. Fuller description is given to a series of cases which exhibited localised tuberculous infiltration and areas of focal necrosis in situations such as the internal capsule and the basal ganglia. Here the patient was usually quite a young child, and the histories showed a high incidence of infectious or respiratory disease—particularly measles—contracted shortly before the onset of the meningitis. The appearances suggested that the tuberculous foci were antecedent to the measles, and that the effect of the latter had been to favour the spread to the meninges. In the opinion of JOUKOVSKY and ROUSSKIKH, children who are subjects of the "exudative diathesis" are the ones in whom this sequence of events is most likely to take place. The final section, on the formation of tuberculomata, is of interest to English readers because it describes a state of affairs which existed in this country some 20 years ago, and will remind them of the extent to which the incidence of such conditions has diminished. Tuberculous masses, either solitary or multiple, seem to be common in Smolensk, and the diagnosis of cerebral new growths in children is complicated by the high incidence of these lesions which we now so rarely see.

The monograph contains some interesting speculations which do not lend themselves to abstraction, and both clinicians and pathologists should find it worthy of attention.

ANNOTATIONS

WAR AND THE UNCONSCIOUS

MOST people are prepared to admit that war is no longer useful to mankind. Many go further and believe that it would fall into disuse if less trouble were taken on keeping up its machinery—if it were made harder, rather than easier, to unsheathe sharp swords at moments of emotion. This blunting of toys in the hands of political children is the objective of most leagues and societies which are trying to abolish war, but it is arguable that they would spend their energies and money better in examining the reasons why the children refuse to grow up. Most of us regard psychology itself as an *enfant terrible* rather than a little angel child likely to lead the world back to peace and prosperity, but Dr. Edward Glover, in his new book,[1] is able to make out a convincing case in favour of psychological investigation into the ætiology of war. To most of his suggestions one may apply Chesterton's remark on another subject: they will not be tried and found wanting; they will be found difficult and not tried. At the same time he has made a genuinely constructive contribution towards one of the most important of all subjects. In applying the psychology of the individual to the activities of the group he reaches illuminating conclusions. Not only is the fanatical pacifist found to be of much the same stuff as the diehards, but the most enlightened efforts for peace are seen to be liable to break down at the crucial moment from the activities of the masochistic traitor within the camp. After a general consideration of the rôles of sadism and masochism in producing war-tendency, Dr. Glover raises the question how far, and in what ways, this tendency can be dealt with. The present state of affairs, in which there is little—least of all the civil service examinations—to prevent a neurotic or borderline lunatic from holding a position of responsibility in times of crisis is one which might, he thinks, be remedied by a rational system of selection. It is probable, however, that individual responsibility for war is almost always relatively unimportant as compared with the war tendency of the group represented, and to produce the necessary change of heart he would have us begin not on the playing fields of Eton or in week-end conferences at Cambridge but in the nursery. To eliminate sadism and guilt from the parents' attitude to the child is certainly a large order, but it is not an order of altogether fantastic proportions; in view of the proved futility of most orthodox peace propaganda in face of the first breath of war scare, it may even some day be attempted as a large-scale experiment. In conclusion, Dr. Glover devotes some 30 pages to an outline of possible research on the problem of war, taking as premisses that there are individual and social advantages to be gained by the abolition of war, but that nevertheless these are periodically offset by advantages to be obtained through a war situation, and that in the estimation of advantages conscious judgment is not necessarily a decisive factor. The investigation includes the preliminary collection of data with regard to adult war (both indirectly from the history of primitive, barbaric, and civilised groups, and directly from a study of the reactions of individual combatants), and a similar study of group and individual mechanisms in adolescent, child, and infantile "war." In his scheme of research in the realms of psychology and psychological anthropology Dr. Glover emphasises the need for experiments over a long period, extending, unfortunately, beyond the working life-span of one investigator. It would be hard to find a more stimulating and constructive treatment of a problem of universal interest. His humour is a deftly wielded hammer with which he drives home his points, and the reader is lucky if he escapes without a few raps over the knuckles.

[1] War, Sadism, and Pacifism. Three Essays. By Edward Glover, M.D., director of scientific research, London Institute of Psycho-analysis. London: George Allen and Unwin. 1933. Pp. 143. 3s. 6d.

MEGALOCYTIC ANÆMIA AND DISEASES OF THE LIVER

Wintrobe and Shumacker[1] have lately collected the reported cases of megalocytic hyperchromic anæmia associated with cirrhosis of the liver, and added the details of an interesting series they have themselves investigated. Megalocytosis may occur in a variety of liver disorders—in cirrhosis, in both primary and secondary carcinoma, in acute catarrhal jaundice, and in chronic passive congestion of the liver associated with cardiovascular disease. In describing a case of megalocytic anæmia associated

[1] Wintrobe, M. M., and Shumacker, H. S.: Bull. Johns Hopkins Hosp., 1933, lii., 387.

with cirrhosis, at the Royal Society of Medicine last year,[2] Dr. Gordon Goodhart emphasised the fact that though the Price-Jones curve was shifted to the right there was no evidence of increased anisocytosis. Megalocytosis of a uniform type seems to be common to all this group of anæmias, and seems to differentiate them from Addisonian pernicious anæmia. There is also no poikilocytosis. The anæmia is usually moderate in degree and there may be rapid and spontaneous blood remissions unaccompanied by any clinical improvement. A clear-cut response to liver therapy appears to be exceptional, and in certain cases both free hydrochloric acid and Castle's intrinsic factor may be present in the gastric juice. Wintrobe and Shumacker suggest that the megalocytosis is not due to physico-chemical factors altering the red cells. The presence or absence of increased bilirubin in the serum does not seem to influence red cell size, at least in vivo. They advance the interesting hypothesis that the anæmia is the result of defective storage in the liver of the principle effective in Addisonian pernicious anæmia, due to destruction of liver tissue, or to a combination of incomplete storage and disordered gastric secretion. Such a hypothesis does not however account for the absence of anisocytosis, which is usually found in anæmias due to a deficiency of the factor effective in pernicious anæmia. It is clear that the significance of variations in red cell size are little understood and will repay further investigation.

CONVENIENT BUT POISONOUS SUBSTANCES

THE remarks of the coroner and the rider of the jury at a recent inquest on a young woman student who was stated to have eaten "six sticks of solidified methylated spirit" call attention to a danger which has arisen from the introduction into common use of a compound which, until a few years ago, was only known in the laboratory. Since ethyl-alcohol melts at −114° C. and methyl-alcohol at −97·1° C. it is unnecessary to say that the "sticks" eaten were not solidified methylated spirit, but the very convenient "meta fuel," which, first introduced in Switzerland as a clean and safe substitute for methylated spirit, especially for travellers who wish to make early morning tea or to heat irons, is now "obtainable of all chemists." This fuel, which smells slightly of ordinary acetaldehyde, is a polymer of that substance, formed by the union of four molecules: $4\ C_2H_4O = C_8H_{16}O_4$. The compound formed by the condensation of three molecules, paraldehyde, is well known in medicine as a narcotic, for which purpose it was used more than 30 years ago. Of the three compounds, the unpolymerised acetaldehyde is a very volatile liquid in winter and a gas in summer, as it boils at 20·8° C. (69·4° F.); paraldehyde is a rather viscous liquid, boiling at 124° C.; and metaldehyde, a solid decomposing slowly into aldehyde at ordinary temperatures—hence the smell and the advice not to keep it in a warm place. At 114° C. it sublimes without melting and at a higher temperature rapidly and completely goes over into aldehyde vapour so that it ignites readily when a light is brought near it, giving off a fair amount of heat (its heat of combustion seems not to have been determined, or at least not yet to have got into works of reference). The convenience of a white solid giving off only a trace of vapour at ordinary temperatures is very great, and "metas" have been sold freely, with the advice on the package that children should not be allowed to eat them. It now appears that enough (about 25 g.) to boil water for six small cups of tea is a fatal dose for an adult. This is not very surprising. Aldehyde itself is not taken internally, except in small amounts in alcoholic drinks and perhaps some fruits, and our knowledge of chemical constitution is not yet sufficient to reason from the harmless paraldehyde to the very different meta compound. No sane adult would eat "metas" except with a view to suicide. To call attention on the package to its toxic properties would seem merely to advertise it as a convenient poison, whilst if its sale is to be restricted so should be that of coal-gas, which is largely resorted to by those who think that they are tired of life, or of methylated spirit itself. It is to be feared that the publicity given to the case in question may lead to other similar cases. It seems that the risk is one of many which must be taken unless a large number of normal people are to be deprived of one of the conveniences of life. One possibility, however, remains. The toxic effect may be due to an impurity which, perhaps, could be removed without much trouble. This view seems to have been taken by Sir William Willcox and Dr. C. Ainsworth Mitchell in a note in the *Analyst* which was the subject of comment in THE LANCET six years ago,[3] but there should be no difficulty in separating metaldehyde from the condensing agents used in its preparation and there seems to be no evidence of organic impurity. The fact that as much as an ounce of paraldehyde can be taken with impunity affords no a priori grounds for supposing that the boy of 16, who swallowed 5 g. of meta fuel in mistake for sweets and who was fortunately cured after a short but serious illness, or the young woman who died after taking nearly an ounce, would have been less affected if the metaldehyde taken by them had been known to be of the highest purity. It may be as poisonous as many other things in common use—white and red lead, potassium dichromate, or the soluble salts of barium—but like these substances it is useful and with due care can be used with impunity by reasonable people who will keep it from children and who do not themselves want to die.

COMPLICATIONS AT MALMÖ

EARLY in 1932 small-pox appeared in Malmö, Sweden. Vaccination on a very large scale was at once undertaken and about 140,000 people were vaccinated in a few weeks; the epidemic ceased. Shortly afterwards there were reported persistent local reactions with severe inflammation, in some cases accompanied by fever, lymphangitis, and adenitis, followed by necrosis and lethargic ulcers, with complete recovery in about two to three months. Apparently no deaths were directly attributable to the infection. Much controversy has centred around these lesions. H. Magnusson[4] incriminates the makers of the lymph—the State Bacteriology Institute. He reports that he found the impressive number of 50,000 *Staphylococcus aureus* per c.cm. (whereas in only one of the 21 foreign vaccine lymph samples did he find this organism, and then only in very small numbers); that necrosis occurred in thousands of cases; that from the lymph and from the abnormal reactions in the human patients strains of *S. aureus*, which were culturally and serologically identical, could be recovered; and that the contaminated lymph produced normal vaccine lesions on cattle, which suggests that the contamination had probably been present in the lymph strain for

[2] Goodhart, G.: Proc. Roy. Soc. Med. (Sect. Trop. Dis.), 1932, xxv., 1713.

[3] THE LANCET, 1927, ii., 760.

[4] Magnusson, H.: Acta Path. et Microbiol. Scand., 1932, Suppl. XI.

some time and had been passed through cattle. C. Kling,[5] on behalf of the Institute, replies that microbes in lymph which have resisted the action of glycerin during storage are admittedly innocuous to human beings; that exactly the same percentage (77) of both Swedish and foreign lymphs contained *Micrococcus aureus* or *citreus*; that similar lymph had been used elsewhere than in Malmö without causing abnormal reactions; that very few abnormal reactions occurred; and that those few were due partly to the action of the highly potent lymph and mainly to secondary contamination with skin cocci through lack of care by the vaccinated subjects.

In the absence of an independent examination it is difficult to attribute the responsibility to the lymph-maker or the patients, but most pathologists will agree with Prof. Forssman's remark that vaccination with lymph containing these large numbers of bacteria can only be condemned. The regulations under the English Therapeutic Substances Act do not permit the issue of a lymph containing the number of micro-organisms above-mentioned, and English workers will remember with an appreciative sense of security the requirements which these regulations embody.

CONGENITAL EPULIS

In their excellent account of a case of congenital epulis, in the May number of the *Edinburgh Medical Journal*, Mr. D. S. Middleton and Dr. W. F. Harvey say that no more than 14 have been described, and the condition is clearly very rare. The case recorded by Dr. P. C. Das, on p. 182, agrees in every respect save one with that of Middleton and Harvey. Hitherto, wherever the sex has been stated, the child has been a female, but Das's patient was a male. It is somewhat remarkable that the fibrous epulis which is comparatively common in adults is also much more often seen in females, though the myeloid type or osteoclastoma shows no such sex preponderance. Opinions have differed over the histology of these tumours, for while Massin and Schorr regard them as epithelial in origin, Das, like Middleton and Harvey, holds that they are mesodermal. But while Das thinks that the tumour is a fibroma composed of embryonic connective tissue, Middleton and Harvey put forward the view that it is allied to the xanthoma. It is surprising that a tumour in this position should attain so large a size before birth and yet derange the normal tissues so slightly that after its removal the development and eruption of the teeth appears to be unaffected. It has been stated that the incisor on the side of the tumour has a tendency to become carious; but it is doubtful if even this is in any way due to the formation of the congenital epulis.

A LIFE OF HAHNEMANN

Hahnemann was born in 1755, and when he was about 35 he took large doses of cinchona and judged that they produced the essential symptoms of ague. He spent the rest of a long and restless life in preaching and practising the homœopathic method of treatment which sprang from this chance observation, and after living in about a score of different places finally died in Paris in 1843. Mrs. Hobhouse has written an interesting account[6] of an exceptional man, but it would have been better if she had left out some of the rather tedious details and given rather more space to discussing Hahnemann's general position in relation to the current medical practice of his times. When, too, the principles of homœopathy receive any notice, there appears to be some confusion of thought; the general rule that an agent which is poisonous in high concentrations may be stimulative if it is sufficiently diluted is several times cited as an illustration of Hahnemann's prescience, and Sir John Weir in the preface claims that vaccine therapy and anaphylaxis are also homœopathic. This seems to be in flat contradiction to what Hahnemann himself taught, for he distinguished (p. 146) very clearly between similars (homoioousia) and identicals (homoousia), and said that he never claimed that identicals had any curative effect. What determined the success of homœopathic practice, from the patient's point of view, at its inception? It seems likely that it got a foothold and flourished partly at least because it involved (at its best) an unusually thorough and careful examination of each patient, because it trusted a sick man's capacity to cure himself, and because it abandoned the vigorous bleedings and purgings popular at the time.

THE SUPRARENAL CORTEX

The suprarenal medulla secretes adrenaline, and a good deal is known about its function in the animal economy. But the suprarenal cortex is probably just as important and we are only now on the edge of discovering anything about its activities. Swingle and Pfiffner tell a fascinating story in reviewing[1] their own particular part in this research. Having tried other ways of approach they come to the conclusion that the first step towards finding out the function of the cortex must be the isolation of its hormone—or at least the preparation of an active extract. As is well known, removal of both suprarenal glands in mammals, such as the cat and dog, is rapidly fatal; they become collapsed and cold, and die on the average less than ten days after the second gland is excised. The investigators' aim, therefore, was to make an extract which would keep such animals alive and in good health, and in this they have been completely successful. A principal difficulty was to keep the preparation free from any impurity which might mask the effect of the hormone, and for a long time they were hampered especially by the presence of small quantities of adrenaline in their extract. They tried to get over this by carefully dissecting the cortex away from the rest of the gland, but this proved ineffective as well as laborious. Fortunately they then hit on a method—based on J. C. Whitehorn's observations—by which the solution can be made to lose almost all its adrenaline on passage through permutit. Not only did this provide an extract containing (if need be) as little adrenaline as 1 part in 5,000,000, but it also enabled them to make it directly from whole gland without the expense of dissection. Each cubic centimetre represents 40 g. of whole suprarenal gland; its adrenaline concentration varies between 1 in 1,250,000 and 1 in 2,500,000; and the content of solids is only 0·2 to 0·3 per cent. For purposes of assay they defined a dog unit (D.U.), which was "the minimum daily kilogramme dose of cortical hormone necessary to maintain normal physiological conditions in the adrenalectomised dog for a period of seven to ten days; the two criteria of normal physiological condition being maintenance of body-weight and blood level of non-protein nitrogen (or urea)." On

[5] Kling, C.: Bull. de l'Off. Internat. d'Hyg. Publ., April, 1933.

[6] Christian Samuel Hahnemann. By Rosa Waugh Hobhouse. London: C. W. Daniel Co. 1933. Pp. 288. 7s. 6d.

[1] Swingle, W. W., and Pfiffner, J. J.: Medicine (Baltimore), 1932, xi., 371.

this definition the old dissected cortex extract had an activity of 4 to 10 D.U. per c.cm.; but curiously enough it was found that whole-gland extract, prepared by the new permutit process, gave much higher values—40 to 80 D.U. per c.cm. Adrenalectomised animals can be kept in perfect health with this cortical hormone; when it is withdrawn they soon become prostrate and moribund; and when its use is resumed they rapidly and regularly recover. And in human therapeutics such extracts have proved capable of rescuing patients from the acute phases of Addison's disease.

Yet the function of the suprarenal cortex remains a mystery. "We still are wondering," Swingle and Pfiffner say, "how the hormone accomplishes the work that it does"; and the careful observations they have made do not provide the answer. They hoped, of course, that by injecting relatively huge quantities of highly potent hormones they would produce some significant overdosage effect—on respiratory metabolism, blood chemistry, or urinary excretion, for example. At the time of their report, however, they had obtained by this means no very definite clue to function. Like the hormones of the anterior pituitary hormone and the gonads, the cortical hormone does not seem to have any toxic effect on normal animals—differing in this from such substances as insulin, pituitrin, and thyroxin. On the other hand there was some reason to suppose that it has an influence on respiratory metabolism, and it was also noteworthy that the signs of renal failure which developed after removal of the suprarenal glands were rapidly abolished by administration of the hormone. Renal insufficiency is a constant finding after adrenalectomy, but the damage is regarded as chiefly functional, since there is a return to normal with cortical extract. The sexual changes often associated with tumour of the suprarenal cortex have led to a general belief that there is some connexion between the suprarenals and the sex glands. If indeed the cortex secretes a hormone influencing the gonads, it is probably present in Swingle and Pfiffner's extract, for all the processes of breeding and lactation go on undisturbed in adrenalectomised dogs which are kept alive with this preparation. Corey and Britton observed that extract prepared by the same method caused precocious sexual maturity in young rats, especially females, but their results have not been confirmed. The same workers have also noted [2] that suprarenal insufficiency leads to changes in the cellular elements of the blood. In experimental animals, as well as in Addison's disease, it is associated with a rise in the red cell count; but this rise is probably only relative, being attributable to loss of fluids and consequent concentration. More interesting are experiments showing a reduction in the number of neutrophil leucocytes, which recalls agranulocytosis in human beings and has given rise to the suggestion that the cortex may preside over formation of this type of cell.

How far, it may be asked, is all this of any practical importance? That remains to be seen. The results of using cortical extract in the crises of Addison's disease have been brilliant; but no form of substitution therapy is likely to affect the tuberculous process which often underlies them. Moreover, when all is said and done, the problem of Addison's disease does not often arise in ordinary practice. On the other hand it is not unlikely that a better understanding of the function of the suprarenal cortex would give us reasons for using such extracts in other conditions. Without going further afield, it is possible—as Dr. Dorothy Hare points out in a letter on p. 209 to imagine a minor deficiency of cortical secretion, not serious enough to produce the syndrome of Addison's disease, which would respond to the appropriate hormone. Robbins [3] puts forward this idea in reporting a case in which "acute hyposuprarenalism" occurred as a complication of streptococcal sore-throat; he thinks the remedy may be useful in patients presenting vague symptoms such as low blood pressure, fatigue, depression, and gastro-intestinal disturbances. It must be admitted, however, that at the Mayo Clinic the few sufferers from neurasthenia, anorexia nervosa, and myasthenia who were given cortical extract were none the better [1]; Bernhardt and Levy Simpson [4] too have found cortical extract useless in a series of cases of myasthenia gravis.

Another line of approach to the problem is through the observation that the cortex is rich in hexuronic (ascorbic) acid, which is considered to be identical with, or closely similar to, vitamin C. As a source of this vitamin fresh cortex has proved three times as potent as orange juice, and it will be interesting to see what, if any, connexion this fact has with the other functions of the cortical hormone. Meanwhile one clinician at least has explored the possibility that vitamin C may be useful in treating Addison's disease, and he reports that three lemons a day got rid of pigmentation which had not yielded to a cortical extract.[5]

[1] Corey, E. L., and Britton, S. W.: Amer. Jour. Physiol., 1932, cii., 699.

[3] Robbins, J. H.: Jour. Amer. Med. Assoc., March 4th, p. 657.

[4] Bernhardt, H., and Simpson, S. L.: Klin. Woch., 1932, xi., 2069.

[5] Szüle, D.: Deut. med. Woch., April 28th, p. 651.

FOOD POISONING DUE TO STAPHYLOCOCCI

ALTHOUGH food poisoning due to staphylococci has never been recorded in this country, at least six well-authenticated outbreaks have occurred in the United States.[6] In a seventh, reported by Dr. R. McBurney,[7] the vehicle of infection was chocolate éclairs served at dinner to women students at an unnamed educational institution, presumably in Alabama. There were 150 definite cases, 75 being very severe, and a number of others with only nausea and weakness. Approximately 325 persons ate éclairs, and 60 to 70 per cent. were affected in some degree. Éclairs eaten elsewhere caused poisoning and all those affected ate éclairs. The incubation period was mostly two to three hours. The symptoms were nausea, salivation, abdominal pain, vomiting, extreme prostration, profuse diarrhœal attacks, and chilliness. There were no deaths, the average time of recovery being about 17 hours, but varying from 5 to 48 hours. From the custard filler and from the pastry golden yellow staphylococci were isolated. From several colonies bacteria-free broth filtrates were prepared. These filtrates, in doses of 10 c.cm., were given to each of eight volunteer medical students in 200 c.cm. of pasteurised milk. Four controls were fed with the pasteurised milk alone, and the students did not themselves know which milks contained the filtrate. Of those receiving the bacterial filtrate all were ill except one, who was slightly nauseated and felt weak; whereas no controls were affected. The incubation period was 1 hour 45 minutes to 3 hours, and the symptoms were similar to those in the outbreak. Some of the volunteers were extremely ill. The toxic material in the éclairs seems to have been contained in the

[2] See THE LANCET, 1932, i., 33.

[7] Jour. Amer. Med. Assoc., June 24th, p. 1999.

custard filling, and this was filled into the shells of pastry by means of a pressure gun; this is an instrument difficult to clean, and in the one used a considerable film of dry custard was noted. The source of contamination of the custard, or pastry, was not ascertained. There were several batches of éclairs, and all were not filled with custard at the same time. This may be the explanation of the fact that only a proportion of the consumers were made ill. Cooking experiments at the bakery of custard artificially inoculated with the staphylococci showed that even in a concentration of 2,500,000 per cubic centimetre of liquid custard they were completely destroyed by the cooking process, which is done at 85° C. for ten minutes. The question of destruction of toxins—and the symptoms were due to the toxic products—does not seem to have been inquired into. But though the origin of the staphylococcus infection was not clearly studied, the association of the outbreak with the toxins of this staphylococcus must be accepted as reasonably established. It adds another outbreak to the small group with this peculiar causation. It is noteworthy that all or nearly all have been associated with the use of milk, either as milk or in some product such as cream cakes, cakes containing milk or, in one outbreak, cheese. Although the possibility of this type of food poisoning is now well recognised in this country, it is of interest that no case has so far been reported. Human volunteers seem essential to proof since animal experiments are negative; but the readiness to sacrifice oneself in the cause of science may be less evident on this side of the Atlantic.

EVIPAN ANÆSTHESIA

A PAPER by Dr. E. Kobel [1] bears out some of the chief conclusions arrived at by the Anæsthetics Committee and printed in our issue of July 1st (p. 43). He refers to the inconvenience of attempting, with a single dose of Evipan, operations which outlast its term of anæsthetic action, and he believes that much caution is needed even when the drug is used for short periods. Not all patients can be safely left to go home soon afterwards; a proportion, he declares, suffer from delayed restlessness or double vision to a degree which makes it undesirable for them to be left to their own devices. He is much impressed with the advantages of evipan as an introduction to anæsthesia and, like the committee, he says that when it is used in this way the anæsthetic must be started within five minutes after injection of the evipan. Kobel has made no investigations into the use of the drug for long operations by repetition of the injection.

ALCOHOLISM IN MEDIAEVAL ENGLAND

THE sequel to Dr. J. D. Rolleston's observations on alcoholism in ancient Greece and Rome [2] was heard by the Society for the Study of Inebriety on July 11th, when he spoke on alcoholism in mediaeval England. The chief sources of information on this subject were, he said, not the contemporary medical writers, but rather the laymen—especially poets, historians, and ecclesiastics. In the Middle Ages, as in classical times, distilled liquors were unknown as a convivial beverage, and alcoholism was due mainly to indulgence in ale, and to a less extent of wine. Inebriety was, however, much more widely spread throughout society, though it predominated among the clergy (in spite of the protests of leading churchmen such as Anselm, Bede, Dunstan, Boniface, and Wycliffe) and university students. The mediaeval publican had a remarkably bad reputation for fraud and dishonesty, while the tavern was usually regarded as a place of ill repute. Dr. Rolleston remarked that though poetry was often associated in the popular mind with praise of strong drink, the three great English poets of the Middle Ages, Chaucer, Langland, and Gower, were keenly alive to the evils connected therewith. In one respect, however, these were less serious than to-day; there was no syphilis, and alcohol did not play its present part as an incentive to exposure to infection and as an aggravating factor in the disease once it is acquired. It is noteworthy that whereas legislation dealing with drunkenness or control of the liquor trade was unknown in the ancient world, the Middle Ages saw the introduction of taxation of drink, reduction of the number of hours of sale, and diminution in the number of taverns.

[1] Deut. med. Woch., June 30th, p. 996.
[2] See THE LANCET, 1926, ii., 866.

THE CHILDREN AND YOUNG PERSONS ACT

THE Home Office has made an "appointed day" order bringing the whole of the Children and Young Persons Act of 1932 into force as from Nov. 1st, 1933, so far as not already in operation. The only exception is Section 51, sometimes called Lady Astor's clause, which enables a local authority to make by-laws as to the employment of persons under 18. It must be remembered that almost all the 1932 Act has been repealed and replaced by a consolidating statute passed last April, and this more recent consolidating statute is to take effect when the 1932 Act (except Section 51) has been wholly brought into force. This means therefore that the new 1933 Act will take effect next November. Already rules have been published which constitute the new children's courts under the 1933 Act. The principal portion of the 1932 Act which is left to come into force next September is Part V. This consists of an amendment of Part I. of the Children Act of 1908 and deals with infant life protection. The consolidation of 1933 did not touch Part I. of the 1908 Act or Part V. of the 1932 Act, possibly because a line was being drawn between matters dealt with by the Home Office and matters dealt with by the Ministry of Health. The foregoing observations relate only to England and Wales. Possibly Scotland will bring its own Act of 1932 into force on the corresponding date but Scotland has yet to undertake the task of consolidating the enactments.

HEALTH IN SCOTTISH PRISONS

THE annual report of the Prisons Department for Scotland (Cmd. 4336, 1*s.* 3*d.*) is now available for the year 1932. Health was good; prisons and similar institutions were free from any disease attributable to sanitary defect or other remediable cause. Dr. Robert A. Fleming, medical adviser to the Department, once more emphasises the fact that the great majority of prisoners greatly improve in physical condition while in prison and alludes to the use of more elaborate psychological treatment of young delinquents. Success has apparently attended psychological examination in Borstal institutions in Scotland, and special attention is being given to patients whose mental state seems abnormal. Though little can be done to influence the young offender whose prison sentence is short, Dr. Fleming holds out the hope of extending the methods of expert preliminary investigation and treatment "when financial considerations permit." Unemployment is an element to be reckoned with both in the statistics of crime and in the after-care of discharged prisoners. One strange effect of it, mentioned by the governor of the Barlinnie prison in Glasgow, ought somehow to be avoided. Twenty-three juvenile adults were admitted to his prison

for the offence of playing football in the street. This offence is punishable by fine; but, where the lads and their fathers are unemployed, imprisonment is liable to follow in default of payment. The punishment is therefore in effect a sentence of imprisonment without the option of a fine.

PERICARDIAL INJECTION OF LIPIODOL

ALTHOUGH lipiodol has so far been used principally for diagnostic purposes in the radiography of the lungs, there is reason to think that it may have a therapeutic value in chronic pulmonary disease. The same applies to its injection elsewhere. It has been employed but seldom in cases of pericarditis since it cannot be expected to give information of much diagnostic value, but the few recorded cases do suggest that its injection may in itself bring about some improvement in the clinical condition. In reviewing the possibilities, Dr. Paul W. Fritsch [1] reports in detail a case of his own.

A girl, 10 years old, with a previous history of articular rheumatism and carditis, was admitted to hospital with a left basal pleurisy and clinical and radiographic evidence of an extensive pericardial effusion. There were subsequently physical signs elicited which were interpreted as indicating a left lower lobe pneumonia, and 130 c.cm. of greenish-yellow fluid were aspirated from the left base. Pericardial puncture was carried out in the fifth interspace outside the radiographic shadow of the heart, the needle being directed obliquely inwards towards the heart. At the second attempt, 75 c.cm. of slightly blood-stained exudate were removed, which contained flakes of pus and pneumococci. Two cubic centimetres of lipiodol were injected, after which radiographic examination showed a fine deposit of opaque substance in the basal and lateral regions of the pericardial sac. The general condition of the patient gradually improved, and the dyspnœa and precordial pain diminished. Four weeks after the injection the patient was free from symptoms, and clinical and radiographic examination showed evidence of mitral disease uncomplicated by effusion; the signs at the left base had also cleared.

Whilst the immediate amelioration of urgent symptoms may be attributable in this case to the withdrawal of fluid from the pericardial sac, it is not unreasonable to suppose that the lipiodol may have been responsible to some extent for the subsequent absorption of exudate and for preventing adhesions. This is the more significant since the fluid had contained pus and pneumococci. The method of treatment appears at any rate to be harmless if small quantities are employed.

PUBLIC HEALTH IN SHANGHAI

Dr. J. H. Jordan's report to the Shanghai Municipal Council for 1932 has just been published, and, having consideration to its bulk and the amount of information which it contains, the publication is prompt. The document is of great interest, as showing how many are the avenues of health to be safeguarded in a great city on the edge of the tropics, for Shanghai, standing approximately at sea level, is at the latitude 31° N. The population of Shanghai proper is made up of a little over a million of Chinese and 44,000 of other nations, but in the area of greater Shanghai, as estimated in October, 1932, the population is over three millions. Throughout the year the Sino-Japanese conflict dislocated the work of the health department, as all sick in the municipal hospitals, which were in the fighting area, had to be removed to new quarters. The evacuation was completed in three days, but the work put a heavy burden on the staff, who had to arrange at short notice for 85 camps housing 44,000 refugees. The incidence of mortality from the communicable diseases is the subject of close tabular statement. The chief cause of death was tuberculosis, and here the figures of the Chinese and the foreigner are more comparable than in the case of other diseases, the natives being proportionately the greater sufferers, even when their preponderance in number may warrant the larger total mortality. In the case of diphtheria, 59 cases were notified among the foreign residents with two deaths, while among the Chinese there were 350 cases with 73 deaths. Of influenza, 11 cases were notified among the foreign population, and there were 157 cases among the Chinese with 69 deaths. There was an outbreak of cholera during the year, and measles was prevalent to an extent which the report acknowledges to be not indicated by the figures, identification of cases being very difficult. Other evidence of the strict sanitary conscience exhibited by the municipal authorities is supplied in the inspections of foodstuffs, bakeries and markets, and the visiting of slaughter-houses and, to a certain extent, the dwelling-places. Slums are being cleared in Shanghai, but it is delicate work to improve conditions where the population shows no interest in reforms or resists them.

[1] Acta Pædiat., 1933, xiv., 412.

SCHOLARSHIPS FOR SONS OF MEDICAL MEN

BY the generosity of Sir Milsom Rees two scholarships will be awarded annually to the sons of medical men. Each scholarship will be of the annual value of £100, to be deducted from the fees, and the scholars will be educated at Port Regis Preparatory School, Broadstairs. At the moment the school contains 50 boys, but further accommodation has now been built, so that there will be ample accommodation for this addition. Boys at entry must be between 8 and 9 years of age, and they may hold the scholarship for some five years. They will be selected at an interview from those boys who have done best in some simple examination conducted in or near their own homes. The first examination will be held in March, 1934, and the scholars will join the school at the commencement of the following summer term. Full particulars may be obtained on application to the headmaster, Port Regis School, Broadstairs.

Mr. D. P. D. Wilkie, professor of surgery in the University of Edinburgh, has been appointed a member of the Medical Research Council in succession to Mr. Wilfred Trotter, F.R.S., who retires in rotation on Sept. 30th, after four years' service.

INDEX TO "THE LANCET," VOL. I., 1933

THE Index and Title-page to Vol. I., 1933, which was completed with the issue of June 24th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

BRITISH DENTAL HOSPITAL.—The report for 1932 expresses regret at the resignation of Mr. George Thomson, who has been chairman since the establishment of the hospital in 1911. He has been succeeded by Mr. E. E. Turner, the honorary treasurer. The scheme for treating adolescents at reduced fees bridges the interval between the school-leaving age and that at which eligibility for dental benefit under the Insurance Acts begins. The facilities provided by the hospital, in coöperation with a number of metropolitan borough councils, for the dental treatment of expectant and nursing mothers and their young children at special clinics have been largely made use of. During the year 5637 children from the London County Council schools attended the clinic at the Lewisham treatment centre.

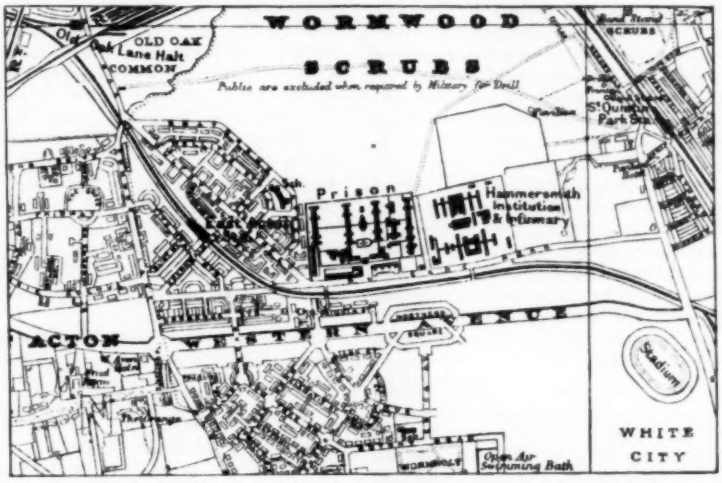
SPECIAL ARTICLES

BRITISH POST-GRADUATE MEDICAL SCHOOL

Mr. NEVILLE CHAMBERLAIN, Chancellor of the Exchequer, laid the foundation-stone of the projected British Post-Graduate Medical School at Hammersmith Hospital on July 17th.

THE STORY OF ITS INCEPTION

Sir AUSTEN CHAMBERLAIN, chairman of the governing body, in his speech of welcome to Mr. and Mrs. Chamberlain, explained that the Chancellor of the Exchequer had been invited to perform the ceremony by the unanimous wish of the board of management because of the great part he had played in the creation of the school. Lord Athlone's Committee had, he said, sat 12 years before to advise on the proper provision for post-graduate medical education in London; the London School of Tropical Medicine and Hygiene, the first part of its proposals, was in existence, and the second part was being inaugurated that afternoon. He regretted that Lord Chelmsford, the first chairman of the board of management, had not lived to be present. The occasion marked another step in the progress of the University of London.



A portion of Stanford's map of London to show the access to the British Post-Graduate Medical School, which will occupy the site of the old Hammersmith Institution.

The EARL OF ATHLONE recalled the remarks of critics in 1921 that his committee was a waste of time and its report would share the fate of those of most departmental committees and rest in the nearest pigeon-hole. He testified to the happy relations and cordial coöperation that existed between the University of London and the London County Council.

Mr. E. M. DENCE, chairman of the London County Council, said that when the Council had been approached by the Government, on the passing of the Local Government Act, 1929, to participate in the present scheme it had fully realised the imperial as well as the national value of a post-graduate school. Financial difficulties had twice prevented the approval of a definite scheme, but those interested in the school had remained undismayed and their tenacity had overcome all obstacles. The Council, employing some 630 medical practitioners, was intimately concerned in an adequate supply of well-equipped medical practitioners and had provided facilities at its own hospitals for under- and post-graduate teaching.

Mr. NEVILLE CHAMBERLAIN recounted the vicissitudes of the project for the school. Its promoters had seen their child fall repeatedly a victim to that shocking accident, a change of Government; they had sat up night after night at its bedside while it struggled against the ravages of that dangerous and infectious complaint known as an economy campaign, but they had brought it through. In 1925 his committee at the Ministry of Health had illustrated the fact that, among doctors as among delegates to world conferences, a complete unanimity on the desirability of the object might go with considerable diversity on the methods by which it might best be attained. The idea of a new hospital had been given up on account of the certain expense of maintenance. No teaching hospital had been prepared to sacrifice the instruction of undergraduates to that of post-graduates, and it had been clearly impossible to combine the two purposes in one institution. In 1927 negotiations had been commenced with the West London Hospital, which had presented the obvious advantage of being connected with a post-graduate college, but the site was very restricted and did not offer sufficient possibilities of expansion. The situation had been completely changed by the passing of the Local Government Act, 1929, which had given the London County Council 30 hospitals containing some 17,000 beds. The change of Government in 1929 had caused some anxiety, but the scheme was not a subject of party controversy, and Mr. Arthur Greenwood had taken it up where Mr. Chamberlain had left it off; under his chairmanship negotiations had been opened with the L.C.C., and the committee had recommended to the Government that the school should be established at the Hammersmith Hospital, which had 400 beds and was very suitable in its site and many other ways. A sum of £250,000 had been allotted, the organisation committee had been formed under Lord Chelmsford, and a Royal Charter had been granted. In 1931 the financial crisis had brought the first National Government into power. Mr. Chamberlain had realised that the promise of a quarter of a million pounds could not be fulfilled, but he had succeeded in compromising with Mr. Snowden for £100,000. When the second National Government had been formed, he himself had been Chancellor of the Exchequer.

THE PROJECT

The project included, he said, lecture theatres, laboratories, and the necessary offices for the dean, professors, and students. The extensions and improvements to the hospital would include new casualty and out-patient departments, a new ward,

three new operating theatres, a central department for the sterilisation of dressings, and a new X ray, light, and massage department. The X ray equipment would be especially important and interesting.

When the two great schools were working side by side, they would make London the centre of the most comprehensive medical teaching institution in the world. On that very day was being celebrated the twenty-first anniversary of the National Health Insurance scheme. The value of that scheme must always be limited by the skill of the general practitioners who formed the panel. Doctors in the remote districts nowadays could not keep their knowledge and skill from rusting, but when the school was built the doors of knowledge would be thrown wide to them. The time would come when no general practitioner, man or woman, would let many years pass without refreshing and rejuvenating his mind at the school. This work reached, said Mr. Chamberlain, the very root of the problem by strengthening the mental equipment of those responsible for the public health. It would do more than any other single enterprise to raise the standard of the nation's health.

The Government, the University of London, the County Council, and the medical profession were all partners in the school, but, more than that, it would fill a long-felt need in the Empire. He had been profoundly impressed by the representations which visitors from the Dominions and even America had made to him that hard necessity forced them to go to the Continent and study in an unfamiliar language. They looked to London for the best and latest in theory and practice. To the benefit not only of Great Britain but of the whole of mankind, those desires had been heard and the reproach had been removed from the country.

Mr. Chamberlain then laid the foundation-stone with the assistance of the architect (Mr. Topham Forrest), the contractor, and the foreman. He was presented with a silver trowel for the purpose by Mr. Forrest. After a fanfare of trumpets, Sir E. HILTON YOUNG, the Minister of Health, proposed a hearty vote of thanks to Mr. Chamberlain, picturing his dreadful decision, as a stern Roman father, whether as Chancellor he should slay his own child or spare it. He announced his intention of making frequent demands upon one so alive to the needs of the nation's health.

MEDICINE AND THE LAW

Workmen's Compensation and Idiopathic Conditions

THE Court of Appeal has lately qualified the principle that in workmen's compensation cases the idiopathic condition of the workman may be largely disregarded. Ordinarily, employers take a workman for better or for worse. He may bring with him to his work a diseased heart, an aneurysm likely to burst at any moment, or an epileptic tendency. These and other similar disabilities may expose him to serious injury which normal, healthy workmen would entirely escape. If he is injured by accident in the course of his employment, the employers must compensate him even though his peculiar disability contributed to the accident. In a well-known case, a workman was quietly tightening a nut with a spanner. There was no jerk or momentary strain; the task would have had no effect on workmen of ordinary physique, but the effort was too much for this man with a disability. He suffered from an aneurysm, which burst; he fell back and died. Was this an accident within the Act? Yes, answered the judges; some part of the human mechanism broke because the man's physique was unequal to the demands of his work. A sequence of decisions on these lines has tended to enlarge the employers' liability; but last month, in Lander *v.* British United Shoe Co., the Court of Appeal decided a doubtful case in an employer's favour. Lander, 67 years old and employed for the last 17 years by the defendant company, was known to suffer from epileptic fits, which caused him to fall from time to time. Using the lavatory provided by the company for its workmen, he fell and fractured his skull with fatal results. It was apparently established that his fall was solely due to a fit. The widow claimed compensation under the Act. There had indeed been an accident "in the course of" her husband's employment, but was it an accident "arising out of" the employment? The county court judge, at Leicester, held that resort to the lavatory was incidental to, and obligatory on, the employment. The lavatory had a hard floor, dangerous for an epileptic to fall upon. The judge allowed the widow's claim, but the Court of Appeal reversed his decision. The lavatory, said their lordships, was not dangerous in itself; the premises where the workman was employed were safe. There was no causal relation or causal connexion between the accident and the employment. The employment brought the workman to the particular spot where the accident occurred, but the spot was not a zone of special danger. "The cause of the fall was peculiar to the workman himself, owing to his idiopathic condition."

The Court of Appeal thus broke away from earlier decisions where an epileptic's fall was held to justify compensation. In these earlier cases the workman was usually in proximity to some obvious potential danger—a river or a railway line; his fall meant that he was drowned or run over. Thus, in Wilkes *v.* Dowell (1905), a man employed to unload coal had to stand on a stage and to guide a bucket raised and lowered by a crane over a ship's hold; he was seized with a fit and fell into the hold. The employers argued that the fall was caused by the idiopathic condition of the workman himself and therefore was not an accident. The Master of the Rolls dismissed the argument. The fall was due to a fit, but the injuries were due to the fall; the fall was an accident. One must look, said Lord Justice Mathew, at the immediate cause. Lord Justice Cozens-Hardy rejected arguments founded on the disabilities which the man brought with him to his work. There might be a disability of age as well as a disability of infirmity unconnected with age. A man may be more prone to injury because he is old, but the employer cannot escape on that account. The workman loading the coal on the edge of a steep drop into the ship's hold was, we must suppose, in a "zone of special danger"; that is why his idiopathic condition did not bar his claim as it did in Lander's case recently. In Lander's case the Court of Appeal referred with approval to its own previous decision in Lawrence *v.* Geo. Matthews, Ltd. (1929). Lawrence, a commercial traveller, was allowed to travel as he liked. He chose to travel on a motor bicycle and, riding home from business, he was killed by a tree blown across the road by a gale. The court thereupon held that this was an accident arising out of Lawrence's employment because the incidence of his employment brought him within the special zone of danger.

These distinctions can be almost too subtle. Let us suppose that the commercial traveller had been

an epileptic and that he chose to travel by train instead of by motor bicycle. If he were seized with a fit in a railway station and fell on the hard platform, then (according to Lander's case) his employers might escape liability, since his accident would be due to his idiopathic condition operating in a spot which was not a zone of special danger. But if the fit occurred when he was standing near the edge of the platform, so that he fell upon the line and was injured by a train, the legal decision might be the other way. Wherever these subtleties may lead, it is interesting to find the Court of Appeal once more paying attention to idiopathic conditions—a phrase familiar in the early days of litigation under the Act. An ideal planning of industry would ensure that no workman with grave physical disability should enter a zone of special danger.

Inquest Statistics

The tables dealing with coroners' inquests in the recently issued Criminal Statistics for England and Wales for the year 1931 (Cmd. 4360, 3*s.* 6*d.*) show a rise in the figures of deaths reported to the coroner and deaths investigated by coroners without inquests, but a fall in the total of inquests held. There were 30,801 inquests in 1931, including 18,873 held without a jury. Coroners directed post-mortem examinations in 11,069 cases and in 8458 non-inquest cases. The figures for recent years show a steady increase in recourse to the valuable discretionary power, exerciseable under Section 21 of the 1926 Act, to dispense with an inquest after directing a post-mortem examination. In spite of the developments of motor traffic the verdicts of death by accident or misadventure were fewer in 1931 than in either of the two previous years. The official introduction to these latest criminal statistics is a jejune document; the interesting comments supplied by the late Mr. Arthur Locke will be sadly missed. The table showing the sex and age of persons on whom inquests were held was omitted last year, the Home Office stating that it served no useful purpose. Mr. Locke, however, in the last introduction for which he was responsible, managed to find matter for comment in this information. The table showed, as he pointed out, that at nearly every point the deaths of males outnumbered those of females. More boys were born than girls, yet women outnumbered men; the statistics of inquest verdicts indicated some of the reasons that led to higher death-rates among males, thus destroying the earlier preponderance.

The recent Home Office figures deal as usual with the last year but one. Statistics for 1932 have already been furnished to the London County Council by metropolitan coroners. These show 8360 deaths reported to coroners (an increase of 205 on the figure for 1931) and 3491 inquests held (a decrease of 112). The proportion of males to females was roughly four to three as against nine to seven in the previous year. Post-mortem examination was made in 2660 inquest cases (76 per cent.) and in 2588 non-inquest cases (53 per cent.). There is an increase in the London figures of suicide in 1932, as there is in the figures for the whole country for 1931. London verdicts indicate that 1892 people met their deaths by accident, as against 2050 in 1931. There is a rise in the number of inquests on newly born children and in the deaths attributed to excessive drinking. Coroners' inquests and inquiries cost the County Council nearly £34,000 last year, but this substantial total includes only £631 12*s.* for jurymen's fees in the 1001 inquests held with juries. The cost of coroners' inquests and inquiries in England and Wales in 1931 was £95,257 for coroners' salaries and £118,406 for other expenses. The latter total presumably includes a considerable item for doctors' fees.

Walton *v.* Lief and Natural Healing Ltd.

Although Mrs. Walton succeeded on both the issues raised in her action against Mr. Stanley Lief and Natural Healing Ltd. (summarised in this column last week) the question of costs remained to be argued. The jury had awarded £123 16*s.* damages on the issue of breach of warranty (Mr. Lief's undertaking that he could cure the lupus erythematosus from which Mrs. Walton suffered) and one farthing damages on the issue of negligent treatment. Sir Patrick Hastings, K.C., applying to the Lord Chief Justice for judgment with costs in the action, argued that in the present proceedings a farthing had not the contemptuous significance which it was considered to have in libel actions. The defendants, he said, had not succeeded on any issue, and therefore should be made to pay costs. Mr. Norman Birkett, K.C., for the defendants, endeavoured to show that Mrs. Walton had pleaded the two causes of action (breach of warranty and negligence) in the alternative; as soon as she succeeded on the former, she had exhausted everything that she could recover, and the jury's answer on the issue of negligence became unnecessary. The significance of this argument was that, if the court accepted it, the defendants would have been entitled to costs (or at any rate would have been relieved of costs) on the question of negligence; the latter costs would of course include the expenses of those medical witnesses who gave evidence that Mr. Lief's treatment of Mrs. Walton was not negligent. The Lord Chief Justice gave judgment with costs for the plaintiff, briefly remarking that he thought the defendants were very fortunate in that the amount of the damages was no more.

Degrees Esoteric and Exotic

Mr. Lief's evidence about the letters which he uses after his name was referred to by Lord Jessel last week when moving the second reading of his University Degrees Bill, a re-drafted edition of his University Spurious Degrees (Prohibition of Use and Issue) Bill. Lord Jessel described Mr. Lief's M.N.C.A. as a degree conferred upon him by the British Society of Naturopaths. Lord Jessel mentioned also a widely circulated pamphlet in which a man called himself "D.C.Sc., Physician B., D.S., D.O.(London), F.R.S." There was, he pointed out, no such degree as D.O. in the University of London; it was wrong that people might be induced to think that the article recommended by the pamphlet was vouched for by some eminent medical authority. One might add that as Parliament has seen fit to protect the name of chartered associations like the boy scouts, the girl guides, and the Order of St. John of Jerusalem, the letters F.R.S. might well be restricted to their accepted application. Lord Jessel's Bill has two objects. Its first clause relates to what we may call esoteric degrees in the sense that they purport to have been conferred by bodies within the United Kingdom. This clause deserves support in the interests of the public and of the recognised universities. There is no difficulty in distinguishing the genuine universities of the United Kingdom. Parliament names them in connexion with special Parliamentary representation, and, so far as medical qualifications are concerned, a series of local Acts has extended the list of universities recognised as within Section 3 (1) (*a*) (qualifying examinations) or Section 7 (1) (membership of the General Council) of the Medical Act of 1886. There should consequently be the less difficulty in drawing the line. The second

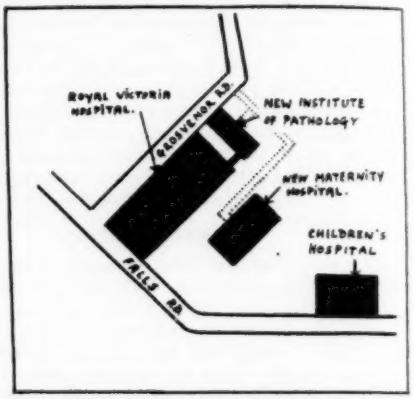
object of Lord Jessel's Bill attacks the abuse of exotic or foreign degrees. Here his proposed remedy requires some consideration. The Bill insists that those who use the title or description of a foreign degree should add the name and country of the university which granted it. But it seems a little hard that a doctor of philosophy of Heidelberg should have to write in full "Ph.D., Heidelberg University, Heidelberg, Germany." At the same time, there are, as Lord Iddesleigh observed, many bogus universities with extremely convincing names greatly resembling the names of real universities. If a man may use a foreign degree provided that he adds the name and address of the university whose degree he claims to be using, the result may merely increase the deception of the public.

IRELAND

(FROM OUR OWN CORRESPONDENTS)

BRITISH MEDICAL ASSOCIATION MEETING

EVERYTHING appears to be well prepared for the annual meeting of the British Medical Association in Dublin, and by the time this appears the Representative Meeting will have begun. It is stated that hotel accommodation has been stretched to the utmost, and it may be hoped, therefore, that the attendance will be above the average. It is nearly 50 years since the Association met in Dublin, and it is likely that many members of our profession will be glad of an opportunity to see Dublin in present circumstances. The attraction of a holiday in Ireland after the meeting is very great, and motorists may be sure of excellent roads and of satisfactory accommodation at hotels throughout the country. The scientific programme of the several sections contains many items of interest, and the social programme will occupy every available hour till far on in the night. The public of Dublin have come very cordially to the aid of the medical profession. The president of the Executive Council is giving a State reception in the historic St. Patrick's Hall of Dublin Castle; the Lord Mayor has given the use of the Mansion House for the reception offices and the trade exhibition; the University of Dublin is conferring honorary degrees and giving a garden party; the National University of Ireland is conferring honorary degrees, and in connexion therewith, University College, Dublin, is giving an evening reception and dance; the Most Reverend Dr. Byrne, Archbishop of Dublin, is giving a garden party; there will also be the president's reception, a garden party at the Zoological Gardens given by the Leinster branch of the Association, and the annual dinner. Several smaller receptions and parties will be given, both during the Representative Meeting and during the annual meeting.. Ladies accompanying members may be sure of having their comforts attended to, for the Earl and Countess of Iveagh have generously lent their beautiful house in St. Stephen's Green as a ladies' club. Arrangements for golf, for tennis, and for various expeditions have been made. Given good weather the meeting should be very successful.

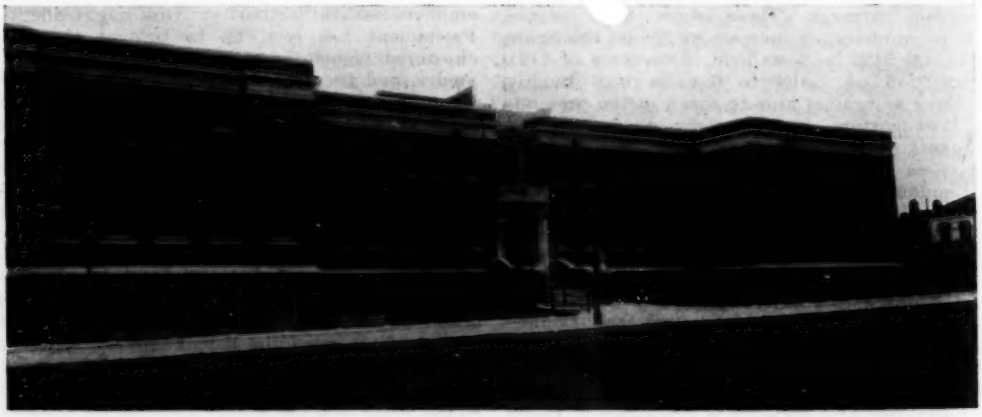


Plan showing site of new Belfast Institute.

AN INSTITUTE OF PATHOLOGY

The new institute of pathology of the Queen's University, Belfast, was formally opened on July 7th by Lord Craigavon, Prime Minister of Northern Ireland, in the presence of a large and representative gathering, over which Lord Londonderry, the Chancellor, presided. In speaking of the scheme and its fulfilment, Prof. J. S. Young referred especially to the time and thought given to it by his predecessor in the chair of pathology, Prof. Murray Drennan, of Edinburgh.

The site adjoins the Royal Victoria Hospital, and close to it are also the Belfast Hospital for Sick Children and the new Maternity Hospital, as yet unopened. The four buildings are thus within easy access of each other. On the lower floor of the new institute is the department of bacteriology, and on the middle floor the pathology department. These are university units intended for lectures, instruction in practical work, and research. There is a good museum for pathological specimens, a library, and two lecture theatres, with smaller laboratories for special


The new Institute of Pathology at Belfast.

work. The upper floor of the building is devoted to direct hospital needs and replaces the former laboratories in the King Edward VII. memorial building. An enclosed passage connects it with the main corridor of the hospital. Here are the bacteriological and biochemical laboratories, with preparation rooms for the examination of pathological specimens sent from the wards.

The opening of the institute is a great advantage. Formerly the department of pathology was at the University which is situated some distance from the hospitals. Now, a closer coöperation between the clinical and pathological sides is assured, and this is an important gain to the Belfast medical school.

HEALTH OF THE PUBLIC

The Health Week, held in Belfast from June 5th to 10th, was a great success and did much to interest people in what the Lord Mayor called the silent work of the health committee. One of the lessons brought home was that much of the responsibility for preventive medicine falls on the public; hence familiarity with health measures must not be allowed to lapse into apathy. "Every householder," said Dr. C. S. Thomson, "should endeavour to be his own medical officer of health." No less than 25,000 people visited the health exhibition in the Ulster Hall, and there was a more than full attendance at the film displays and lectures. These last were given by, among others, Dr. F. M. B. Allen, Dr. David Lees (Edinburgh), Prof. J. R. Currie (Glasgow), Dr. Andrew Trimble, Dr. S. Simms, and Alderman J. D. Williamson, M.D., chairman of the public health committee. Dr. Williamson, in tracing the history of public health in the city, was able to point out that typhoid fever had been almost exterminated as a result of a forward policy; and in the various meetings both speakers and audience expressed their appreciation of the services of the committee, and especially of Dr. Thomson as medical superintendent officer of health.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE AMERICAN MEDICAL ASSOCIATION

THE eighty-fourth annual meeting of the American Medical Association has just been held at Milwaukee under the presidency of Dr. Dean Lewis, of Baltimore. The president's address ranged from plague in the time of Justinian to the excess production of physicians in the United States of to-day. "Careful studies indicate," he says, "that there are 25,000 more physicians than are required." Reference was made to regulations restricting the licensing of graduates from foreign medical schools—regulations to which attention has already been drawn in this column. The report of the Committee on the Costs of Medical Care was unfavourably criticised. The attitude of the profession towards public health work, was, on the contrary, declared to be most sympathetic. "Doctors welcome public health measures and, I am sure, will do everything in their power to prevent politics from entering into the field."

Another friendly gesture towards preventive medicine was perhaps intended in the election as next year's president of Dr. W. L. Bierring, of Des-Moines, Iowa, who was recently appointed health commissioner of that State. Although he is not a specialist in public health, Dr. Bierring has had a distinguished medical career and was for many years president of the State board of health. He is a descendant of Vitus Jonassen Bering who gave his name to the Bering Strait.

Thanks to a handsome profit from its journal and a remarkably successful investment policy the Association's finances are in a sound condition. The popular journal *Hygeia* is now also published on a self-supporting basis. Three-quarters of a million dollars are held towards the cost of a new building for headquarters in Chicago. The meeting next year is to be held in Cleveland, Ohio.

DEATHS FROM SCORPION STING

The public health department in Arizona reports six deaths from scorpion sting in the last two years. Most of these deaths have been of children. Both the desert scorpion and the rock or mountain scorpion have been responsible for fatal poisoning. Treatment is rendered difficult by the very minute wound caused by this sting. It is recommended that a tourniquet be applied and the puncture wound laid open by a cross incision and allowed to bleed freely. Reference is made to English research which has demonstrated that the scorpion venom is identical with that of the cobra, and a pious hope is expressed that within two or three years a specific antivenin will be available for treatment of the victims of scorpion sting in the State of Arizona, similar to that already made available by the Mexican Institute of Health and the French Government.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lts. F. W. Gayford and T. S. Osborne to be Surg. Lt.-Comdrs.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. D. C. Wilson to be Surg. Lt.-Comdr.
Surg. Sub-Lt. R. H. Wheeler to be Surg. Lt.
Proby. Sub-Lt. E. D. Mitchell to be Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Lts. to be Capts.: G. F. Harrison J. M. Ryan, and C. A. Levy.
Lt. (on prob.) H. B. Wright resigns his commn.
T. McGregor McNie to be Lt. (on prob.).

TERRITORIAL ARMY

R. K. Reeves to be Lt.
A. C. Frazer to be Lt. supern. for serv. with Univ. of Lond. Contgt. (Med. Unit), Sen. Div. O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. G. S. Lewis, from Active List, to be Capt.

INDIAN MEDICAL SERVICE

Lt. (on prob.) D. P. Nath to be Capt. (on prob.).
Lts. (T.C.) C. L. Ahluwalia, G. Singh, K. L. Malhotra, S. P. Bhatia, and P. K. S. Gupta to be Capts. (T.C.).

RESERVE OF AIR FORCE OFFICERS

Flying Officer G. Williams relinquishes his commission on completion of service.

ROYAL VICTORIAN ORDER

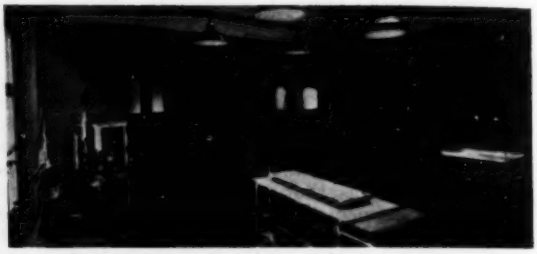
On the ccasion of the visit to London of the King of Iraq, H.M. the King has appointed Major H. C. Sinderson, O.B.E., R.A.M.C. (Militia) to be a membe of the Fourth Class of the Royal Victorian Order.

NATIONAL HOSPITAL, QUEEN-SQUARE.—We have now received a programme of the lectures and demonstrations arranged at this hospital for the terms beginning on Oct. 2nd and Jan. 22nd, 1934. Particulars may be had from the secretary of the medical school, National Hospital, Queen-square, London, W.C.1.

THE BUCKSTON BROWNE SURGICAL RESEARCH FARM

THE Buckston Browne Surgical Research Farm of the Royal College of Surgeons, which was opened last week by Sir Holburt Waring,[1] is situated in the village of Downe, Kent, and adjoins the grounds of Down House, the former home of Charles Darwin.

Residential Hostel



Animal Operating Theatre

The farm consists of two fields, with an area of 13 acres, on which there are two buildings—one containing laboratories and one a residential hostel.

The basal idea of the laboratory building was suggested by Dr. G. Scott Williamson to the architect, Mr. E. C. Frere. Three corridors radiate from a central hall. The theatre and sterilising room are planned and equipped on the pattern of a modern cottage hospital, and separate laboratories for histological and physiological work are provided. There is a kitchen for the preparation of food for the animals. The animal rooms open to the exterior on one side, so that when required further extension of the accommodation can easily be obtained by closing in some of the outer compartments which are at present provided only with a roof. The laboratories are heated by a system of hot-water pipes and a domestic gas and electric light supply is also available.

A Physiological Laboratory

The other building, in the hall of which the opening ceremony took place, was designed as a residential hostel for permanent or occasional workers. Sir Arthur Keith, when thanking Sir Buckston Browne for his magnificent gift, commented on the stimulating value to young members or Fellows of the College interested in a particular problem, of opportunity to go down to the laboratories for a week-end and discuss their ideas and plans for research. The building contains a large hall to serve as a common room, on the walls of which hang paintings of the Stuart Kings, copied from Van Dyck, presented by Sir Buckston Browne. A gallery runs along one side of the hall from which the sleeping rooms open. These are pleasantly furnished and each door bears the name of an illustrious figure in English surgery: Hunter in the place of honour in the centre, Lister on one side, while the name of the third room is in abeyance pending arbitration, according to Sir Arthur, between his own choice of Paget and Sir Buckston's championship of Jenner's claim. For the occasion of the opening ceremony at least, he said, he had caused Jenner's name to be carved on a wooden plaque in deference to Sir Buckston's views, but did not guarantee that it was permanent. Over the entrance to the hostel is a statue of a friend of animals, St. Francis of Assisi, and the arms of the Royal College of Surgeons.

Sir Buckston Browne confessed to a deep admiration for Jenner, one of Hunter's most brilliant pupils, and a benefactor of humanity whose work had had too little recognition. Speaking of those who opposed all experimentation on animals, he maintained that whatever was done for or ascertained for the benefit of man, who was only the head of the animal kingdom, was used in our veterinary colleges and hospitals for the benefit of animals. It was to be hoped that in these laboratories of the Royal College of Surgeons some steps would be made towards the elucidation of the biological problems of surgery.

Animal Rooms and Laboratories

Among those present were Lord Lamington and Sir Charles Sherrington, and the following among other prominent surgeons :—

Lord Moynihan, Sir Charles Ballance, Sir James Berry, Sir John Bland-Sutton, Sir George Makins, Sir Cuthbert Wallace, Prof. G. E. Gask, Prof. E. W. Hey Groves, Prof. C. A. Pannett, Prof. G. Grey Turner, Mr. W. McAdam Eccles, Mr. Sampson Handley, Mr. R. E. Kelly, Mr. Hugh Lett, Mr. V. Warren Low, Mr. R. P. Rowland, Mr. W. G. Spencer, and Mr. A. E. Webb-Johnson.

[1] See THE LANCET, July 15th, p. 139.

VICTORIA HOSPITAL, LICHFIELD.—The Earl of Harrowby, lord-lieutenant of Staffordshire, recently opened the new buildings of this hospital, which has been re-erected on another site. There are 34 beds, and the cost has been £25,682.

PANEL AND CONTRACT PRACTICE

National Health Insurance: Coming-of-Age Celebration

A LUNCHEON to meet those responsible for creating, fashioning, and launching the National Health Insurance Act, which came into operation on July 15th, 1912, was held at the Hotel Victoria, London, on July 17th. The function was arranged by the approved societies organisations, the British Medical Association, the National Association of Insurance Committees, and the bodies representing dental, ophthalmic, and pharmaceutical service. The principal guest was Mr. Lloyd George, and with him were several of his colleagues in the Government of 21 years ago—Lord Reading, Mr. Winston Churchill, and Sir Herbert Samuel. Two former Ministers of Health, Dr. Christopher Addison and Mr. Arthur Greenwood, attended, and among the members of the present Government were Mr. J. H. Thomas, Sir Kingsley Wood, and Mr. Ernest Brown. Many members of the staff of the Ministry of Health, with Sir George Newman at their head, were present, and they included Sir James Smith Whitaker, formerly medical secretary of the British Medical Association.

The medical men present who were prominently identified with the organisation of the profession in connexion with national health insurance were the following: Sir Henry Brackenbury (chairman of council of the British Medical Association), Dr. E. K. Le Fleming (chairman of Representative Body), Mr. N. Bishop Harman (treasurer of the Association), Dr. H. G. Dain (chairman of the Insurance Acts Committee), Dr. H. C. Jonas (chairman of the Panel Conference), Dr. G. W. Miller (chairman of the Scottish Insurance Acts Subcommittee), Dr. H. J. Cardale (chairman of the London Panel Committee), Dr. Lewis Lilley and Dr. W. E. Thomas (members of the Insurance Acts Committee), and Dr. E. R. Fothergill and Dr. J. P. Williams-Freeman (former prominent members). Dr. Alfred Cox (lately medical secretary) was present, as was Dr. G. C. Anderson (the present medical secretary), and Dr. Robert Forbes (secretary of the Insurance Acts Committee). Mr. George Northcroft (president of the British Dental Association) with a number of representatives of that body occupied a table, and on every side people well known in the world of approved societies and insurance committees were recognised. The company numbered close upon 300.

Sir HILTON YOUNG, the Minister of Health, occupied the chair, and proposed the toast of "National Health Insurance." The figures illustrating the present position and achievement after 21 years, he said, were of almost astronomical magnitude. The number of persons insured under the scheme was 18½ million. From the inception of the scheme up to the present the amount disbursed in benefits had been £490 million. The Act was being administered by 7000 approved societies and branches and 200 insurance committees; 19,250 medical practitioners were under contract of service, and 12,000 chemists' establishments supplied drugs and appliances in connexion with National Health Insurance. He distributed praise to the approved societies, which, he said, illustrated in the variety of their forms of administration, the genius of adaptation to local peculiarities and interests, and to the medical profession, saying that his brief experience of his high office as Minister of Health had shown him how admirably the profession discharged its functions. He added that there was no better proof of the success of an organisation than the fact that it was imitated by others, and since the initiation of the scheme in this country 12 other countries, as widely apart as Norway and Japan, had instituted organisations similar to the one existing here. It was a tribute to the excellence of the scheme that it had survived the great trial and strain of the war, and the even greater trial of the prolonged depression and unemployment and shrinkage of national and individual income which had followed it. This was shown by the figures of successive valuations. At the first valuation there was a surplus of £17 million; at the second a surplus of £42 million, and at the third one of £36 million, a slight fall indeed, but still a remarkable testimony to the way in which the scheme had stood the test of the times.

MR. LLOYD GEORGE'S SPEECH

Mr. LLOYD GEORGE, who received a great ovation began his speech with an allusion to the presence of the officials, past and present, of the British Medical Association, and to the fact that that was one of the bodies promoting the luncheon. "I rub my eyes and say, 'What a pleasant dream! I do hope no one will wake me up.'" He went on to speak of his pleasure on meeting many of those associated with him in bygone struggles, and mentioned one or two who had passed away—Mr. Charles Masterman, Sir Robert Morant, and Sir Laming Worthington-Evans. He had almost forgotten what a really bad time he had 21 years ago. There was never a measure more needed—and less wanted. There had been no propaganda to create a demand. There was no real enthusiasm for such a measure, not even a party interest. "Society" was up in arms, and the agitation attained very formidable dimensions. Mr. Lloyd George, to his own huge enjoyment and that of the audience, read from a bundle of papers extracts from the speeches at the Albert Hall demonstration against the National Insurance Bill. The keynote of the oratory was "England and liberty." A lady described the Chancellor of the Exchequer of those days as a tyrant attempting to do what the worst kings in English history had failed to accomplish. There was a great shout of "No" from the massed thousands of mistresses and servants in the Albert Hall when she asked whether they were prepared to sit down tamely under what their fathers would have died to prevent. In spite of all the Welsh attorneys in the world, Britons never would be slaves. "Now, that is the stuff," Mr. Lloyd George interjected. "Politics was real fun in those days. In these decadent times no one is hated—outside his own party."

Then Mr. Lloyd George came to the doctors. In passing he mentioned the service of Dr. Alfred Cox in helping the smooth and effective working of the Act. But the doctors at that time were honestly persuaded that they were faced with ruin. It was a hard-worked profession with little leisure—at any rate, before the Insurance Act—and it was the first time that the profession as a body had come into politics, and politics was a heady wine, to which you had to get accustomed, and the medical profession was not. "I do not think they have done too badly for a profession that was going to starve. I see that sickness benefit during all these years has amounted to £178 million, and medical benefit to £170 million—not all gone to the doctors, but quite a good share of it." In a few days the annual meeting of the British Medical Association would be held at Dublin. He

had no doubt it would carry many resolutions, but one resolution would not be carried, or even moved—namely, a resolution demanding the repeal of the medical benefit of the National Insurance Act and a return to the old contract system. He was glad to find that there were nearly 20,000 doctors working the Act now; he was told there would not be one. The medical correspondent of the *Times* had said that the doctors themselves were so much better off under the new system that their contentment rather than their dissatisfaction offered a target for criticism.

"I am very pleased that I persisted in the teeth of much opposition. There is compensation in the passing of years, that you see the fruition of your labours. I have now turned from politics, and have become a humble market gardener. I planted some fruit trees in unlikely soil. We had to get rid of weeds and worms and of pests of all kinds. But it is a great source of pleasure to me every morning to see those trees laden with fruit. I was told when this Insurance Act was carried that the soil of Britain was not adapted to these compulsory ameliorative schemes, that Englishmen liked liberty to grow weeds, that the proposals I made were of the wrong type, and that certainly I was not the sort of fellow to plant anything. Well, I am glad to be with you who laboured with me in the planting, and that we have lived to see the tree grow and bear abundant fruit in the improvement of the health of the community, in the lifting of misery and anxiety from millions of households, and in its addition to the security of the State."

Mr. STANLEY L. DUFF briefly proposed the health of Sir Hilton Young, stating that the present Minister of Health came to his office with the respect of them all, and had remained in it to earn their affection. He also commented on one fruitful result of the National Health Insurance Act in bringing together administrators outside the department and those within it. They had learned many things about each other, and had come closer together on a firm ground of understanding.

Sir HILTON YOUNG contented himself, in acknowledgment, with expressing in his turn the thanks of the company to those who had helped to make the occasion noteworthy, especially to Sir Thomas Neill, the chairman of the reception committee. "We part," he added, "with the memory of high work well celebrated."

A Question of Emergency

Discussion has arisen between the panel and insurance committees for London about the proper procedure to adopt for emergency treatment. The executive section of the medical benefit subcommittee, to whom is delegated any decision as to refunding of claims, recently decided that some service rendered by a doctor to an insured person was one for which the doctor could be paid under the emergency scheme. The case was shortly as follows:

The patient met with an accident at home and his son telephoned for Dr. A., on whose list he was; but Dr. A. was out at a case. The son was advised to telephone for an ambulance and to send the patient to hospital. After ringing up several hospitals without success, he obtained the service of the nearest insurance practitioner. This Dr. B., after examining the case, said he would call again next day, which he did, and then said: "You had better get your own doctor to attend now; would you care to pay my fee now which is 5*s*." The applicant replied that he was, he thought, entitled to free treatment from any insurance practitioner if his own doctor was not available, but he paid the fee and wrote to the insurance committee about it. Dr. B. stated that the patient had hurt his side through falling against a stair post. He found on serious injury; the patient was not in any great pain and declined an injection of morphia which was tentatively suggested. There was nothing in his condition demanding immediate treatment. "He struck me," said Dr. B., "as making a good deal of fuss over a trivial accident. I was not the nearest doctor and I felt justified in treating him as an ordinary patient and charging a fee." Dr. A. stated that a message was received, when he was out at a maternity case to the effect that the father had fallen and had broken his ribs. In view of the alleged severity of the accident the applicant was advised to summon an ambulance and get the patient taken to hospital. . . .

In this case, it seems, the insured person claimed the refund of 5*s*. paid. The executive section decided that there was an emergency, that the doctor giving the treatment could obtain payment for his services under the emergency scheme, and that the insured person must have his money refunded. In the view of the panel committee the action taken by the insurance committee was irregular in arranging for the refund of a fee before the panel committee had decided whether it was a case of emergency or not. Clause 5 (1) of the Allocation Scheme provides that if neither the practitioner nor his deputy is available for giving to the insured person any treatment immediately required owing to accident or other sudden emergency it shall be the duty of any practitioner who may be summoned and is available to give the insured person any necessary treatment. From the practitioner's point of view the word "immediately" is important. Obviously bleeding, states of unconsciousness, or sudden very acute pain do require immediate treatment, but can that be said of a man who bumps his chest, lies calmly in bed and refuses the injection of a drug to relieve pain? Clause 3 of the Distribution Scheme runs:

"If a practitioner provides treatment in case of accident or sudden emergency to the patient of another practitioner under the terms of the Allocation Scheme, payment will be made in accordance with the scale of fees appended hereto. Accounts for such treatment must be sent by the practitioner to the committee on a form provided by the committee for the purpose within seven days after the treatment is given. Such accounts will, before payment, be submitted to the panel committee who *shall have power to disallow any item of account*. . . ."

The rest of the clause deals with the method of payment, whether from the fund or from the remuneration of the insured person's doctor, subject to appeal by either the doctor giving treatment or by the insured person's doctor against the panel committee's decision. Obviously this must mean that if, in view of the facts disclosed, the panel committee decides that immediate treatment was not necessary in any particular case, the doctor giving treatment cannot be paid under the emergency scheme. He then has the right to charge the insured person who (unnecessarily) called him in. The object of the procedure is to ensure that treatment is always given but that the insured person should pay extra for it if he fails to exercise a little patience when in some trivial occurrence he is momentarily unable to secure the services of his own doctor.

It is doubtful whether Dr. B. was in order in charging a fee until the panel committee's decision had been given, but it seems quite certain that the executive section of the medical benefit committee has no authority to decide whether any given service is an emergency or not. This is definitely the duty of the panel committee. The section's appropriate action would have been to advise the doctor to apply for payment under the emergency scheme and to inform the insured person that the fee paid would be refunded if in the opinion of the panel committee the service rendered by Dr. B. was considered to come within the scheme relating to emergency work.

CORRESPONDENCE

BLOOD CHANGES FOLLOWING IRRADIATION

To the Editor of THE LANCET

SIR,—The tenth annual report of the British Empire Cancer Campaign is a fine record of advance, and will be studied by all persons interested in the cancer problem. It is for this reason that I fear that too great prominence may be given to the "rather startling" statement, to which you refer in your annotation, regarding blood changes that have been recognised as occurring in X ray and radium workers and patients. It was the experience that such changes may occur, more than anything else, that gave birth to the X ray and Radium Protection Committee in 1921. The recommendations of this committee were followed by such a measure of protection that fears were abated certainly in so far as X ray workers were concerned. The matter was very different in the case of the radium worker. In 1924 the careful researches of J. C. Mottram drew attention to the profound blood changes which might occur in radium workers: aplastic anæmia, with marked diminution in the number of the red cells, with anisocytosis, and an absence of nucleated red cells; concurrently with this there was a low polymorphonuclear count with low lymphocyte count, the latter being the first evidence of danger, and frequently followed quite suddenly by severe anæmic changes. The result of this work, fortified as it was by reports from other countries, led to the most careful attention to the health, hours of work, and general working conditions of those engaged in handling radium. Even as lately as 1931 Prof. Wintz, in his brochure issued under the auspices of the Health Organisation of the League of Nations, stressed the importance of great care. While the work of R. H. Simpson and G. White Phillips cannot be disregarded, it is diametrically opposed to the consensus of opinion of all other workers both in this country and abroad. Until, therefore, it has received ample confirmation, it is greatly to be desired that we shall not depart in any material degree from a proper fear and respect for a potentially dangerous therapeutic agent, or the lamentable story which called for urgent measures in the past may be repeated.

I am, Sir, yours faithfully,

London, W., July 17th, 1933. STANLEY MELVILLE.

MEDICAL BENEVOLENCE

To the Editor of THE LANCET

SIR,—The annual meeting of the British Medical Association would seem to be an appropriate moment for the honorary officials of the Royal Medical Benevolent Fund to bring its claims to the attention of the profession. The report of the Fund for the year ending Dec. 31st, 1932, has recently been published, and its contents are worthy of perusal by every one of the 5000 direct subscribers; as to the other 47,000 medical practitioners who do not subscribe, we feel sure that, if they read it, they would at once become subscribers; then our dream of a subscription income of £25,000 per annum instead of £12,451 might become true.

We have reason to know that many medical men are somewhat confused about the medical charities, and perhaps a word here may be allowed to make it clear what we do. The Royal Medical Benevolent Fund exists for the purpose of giving "pecuniary assistance to distressed members of the medical profession, their wives, widows, and children." This is done in the form of annual maintenance grants, and in single grants to assist over temporary difficulties; a limited number of annuities are also provided for those who are aged or disabled. Such assistance is given alike to applicants who may have been either subscribers or non-subscribers.

May we here point out that all the sums given in annuities are provided by the invested funds, whereas the grants, for which a fresh application has to be made each year, are provided by the subscription income. Our ordinary standard grant is up to £26 per annum for dependents of doctors, but in some few instances we have exceeded that. We feel sure that all will agree that a paltry 10*s.* per week for a widow or daughter is not very much for our grantees, though we can assure you, Sir, that it is a perfect godsend to some of them, so dire is their poverty. That is why we want a subscription list giving us £25,000 per annum. We can then raise our standard grant to something more than £26.

Our organisation works in coöperation with the Medical Charities Committee, the Sir Charles Hastings' Fund, and Epsom College, and there is complete interchange of information about applicants. Whether a subscriber sends his subscription direct to us or allocates it to us via the British Medical Association is not of much moment, but we hope to enlist the personal interest of all subscribers in the work of the Fund. Augmenting the work of the Fund, mention must be made of the Ladies' Guild, which is an auxiliary of the Fund, dealing mainly with personal service, providing clothing, assisting in education of children, and giving help in sundry other ways to the beneficiaries. It collects its own funds by subscriptions, collections, and entertainments which are organised on its behalf from time to time, and gathered in last year £4000 for these purposes.

We need only say in general that the need for this medical charity is great, that it is never ending. To prove this, up to the end of June we have given in grants in the first six months of this year, 1933, £1023 more than in the corresponding period of 1932, and against that we have received £614 less in subscriptions than last year. This is a matter with which to deal most of us hold is a prime duty of the profession as a whole.

We have not attempted to describe the class of cases that come before us asking for help, as you are kind enough to publish from time to time notes of cases which have been dealt with by our case committee.

We are, Sir, yours faithfully,

THOS. BARLOW,
President.
LEWIS G. GLOVER,
Honorary Treasurer.
R. M. HANDFIELD-JONES,
Honorary Secretary.

Royal Medical Benevolent Fund, 11, Chandos-street, Cavendish-square, London, W., July 22nd, 1933.

CLAUSTROPHOBIA IN THE PRISON POPULATION

To the Editor of THE LANCET

SIR,—In criticising a report of my recent speech on the Parker case in the House of Commons, Dr. Millais Culpin says that "Fear of great danger in bringing claustrophobia into legislation has one quality of a phobia, lack of rational foundation. Is claustrophobia in a prisoner to be regarded as something to be sternly ignored?" Surely it is most reasonable for Parliament to fear the great danger of

unintelligent sympathy with a prisoner which may undermine the authority and power of the prison authorities. Surely some prisoners are desperate characters and some are shrewd enough to feign a phobia, if much publicity were given to the possibility.

But a genuine phobia is certainly not to be ignored. Even Dr. Culpin agrees with my statement that it may be "extremely difficult to be sure of that condition." The practical conclusion—and Parliament is no place for any other—is clearly that:

(1) The medical officers of prisons must be given all requisite attention and support from the authorities.

(2) Prison governors, with whom the ultimate responsibility within the prison rests, should, like army officers, have at least some elementary training in mental and general hygiene.

Of this the Minister was unable to give me any assurance.—I am, Sir, yours faithfully,

FRANCIS FREMANTLE.

Hatfield, Herts, July 17th, 1933.

To the Editor of THE LANCET

SIR,—May I congratulate Dr. Culpin on his timely and necessary criticism of the treatment of a prisoner with claustrophobia. If a patient shows signs of some physical disease, say fever, he is placed in hospital. If he shows signs of mental disease, say claustrophobia, he is locked in a cell. The medical officer who cannot distinguish the "objection of every prisoner to being shut in a cell" from the terrific emotion displayed by a claustrophobiac in the same circumstances must be suffering from extreme myopia. Anyone with a psychiatric sense can diagnose phobiacs by their behaviour in the streets or in the underground railway. An opportunity to hear the patient describe his symptoms and observe him while he is doing it should clinch the diagnosis. I agree that these cases may be difficult to diagnose from malingering, but as cases of doubtful physical disease are given the benefit of the doubt and treated in hospital, why should not psychical disease be similarly treated? Until, however, as Dr. Culpin would have it, psychopathology is elevated in the teaching curriculum to the same importance as physical disease so long shall we have cases as deplorable as the one reported in your columns.—I am, Sir, yours faithfully,

CLIFFORD ALLEN, M.B., D.P.M.

Dartford, July 15th, 1933.

EFFICIENT TREATMENT OF PERNICIOUS ANÆMIA

To the Editor of THE LANCET

SIR,—I was not present at the meeting of the Association of Clinical Pathologists, held in Manchester on June 24th, but have read with very great interest the papers communicated to the meeting, which were published in your issue of July 8th. Several of the points require emphasis, while others dealt with in your editorial are already known to us here.

For nearly five years we have been running a daily anæmia clinic in the Manchester Royal Infirmary, and have kept under observation over 400 cases of pernicious anæmia and some 300 microcytic anæmias. The majority of the cases of pernicious anæmia are seen and the blood examined at regular intervals of two weeks—two months. Their treatments are carefully controlled and their respective doctors kept informed of the blood condition and the maintenance dosage necessary. Thus none of these patients lack suitable and adequate supervision as long as they attend this clinic, where they are in the hands of our "anti-anæmia" team. Difficulties may arise where there is an unsympathetic panel committee or a lack of understanding on the part of the practitioner as to the absolute necessity of keeping the patient indefinitely on adequate doses of a potent anti-anæmic preparation. Fortunately, in Manchester, we very rarely meet these difficulties and, in consequence, most of our patients keep well and receive adequate maintenance therapy.

We have recently secured the coöperation of certain other hospitals in order to enlarge the available pernicious anæmia population. Owing to the unique opportunities available to this department we have carried out extensive investigations on pernicious anæmia, and have also paid particular attention to the potencies of the various anti-anæmic products available. Our observations have caused us considerable concern as to the present position. In the first place, it is very undesirable that commercial products should be tested indiscriminately by anyone without adequate controls, as I have frequently indicated in the past; at meetings of the section of therapeutics and pharmacology of the Royal Society of Medicine in January and March of this year I commented on the many fallacies which may occur.

Some time ago I reported the results of an investigation into the activities of some 16 stomach preparations—less than half of these being potent. The manufacturers of the remainder were informed privately of the inactivity of their products; some of them were willing to make the necessary improvements, but others, surprisingly, did not appear to be so solicitous for the welfare of their consumers. It is a simple matter to make and maintain the potency of oral liver and desiccated stomach preparations, but it is much more difficult to produce consistently potent parenteral liver preparations, and it has been found to be absolutely essential that each batch should be clinically tested before issue. This is obviously not being done by all the producers of these liver extracts, otherwise many of the products would not be offered for sale—with the resulting reports of so-called "cases of pernicious anæmia resistant to liver." I have been using parenteral liver preparations for two and a half years now on in- and out-patients, and I hope shortly to report the results. I must admit that I was very disappointed to see the *relatively* poor responses that Dr. Dyke obtained, but perhaps those were not his best cases. Thus he administered parenteral preparations in doses of 20 c.cm. upwards, at the rate of 2 c.cm. daily, with reticulocyte responses of less than 20 per cent. in the cases he quotes. From our experience he ought surely to have obtained at least double these figures. I have been using a preparation of which a total dosage of 6–8 c.cm. (equal to 60–80 g. fresh liver) was sufficient to raise the red blood-cells in a large number of controlled cases from below 1,000,000 to normal without further treatment, occasional maintenance doses of 2 c.cm. being then continued according to the condition of the patient's blood.

The question arises: how is the activity of such preparations to be stated? as being made from and equivalent to 10 g. of fresh liver per 1 c.cm. of extract, or as having a potency equal to many kilogrammes of orally administered fresh liver? I admit that all this must be bewildering to the practitioner who is not in a position to know the true potencies of all these products, but he will not go far wrong if he uses only such anti-anæmic products as are guaranteed by the manufacturers to have been clinically tested before issue. I am hoping that the time is not far distant when all such products will be required to undergo clinical trial and be passed

as satisfactory before they can be offered for general use.

If I may add a note on the cord degeneration in pernicious anæmia, I would like to state that in the whole of our series I have never seen subacute combined degeneration develop in cases of pernicious anæmia on stomach treatment, but I have noted its occurrence when liver has been the remedy. It is too early to express any opinion relating to parenteral liver in this respect. In pernicious anæmia with initial cord lesions, stomach therapy has produced remarkable improvements in practically every case. Those with subacute combined degeneration without anæmia have not shown on the whole such good responses, but here again definite improvement has followed in nearly every case. So far, in our experience of a large series, desiccated stomach maintained in full doses has been easily the best and most satisfactory treatment from the point of view of results; it is, of course, too early yet to pass a considered opinion on the value of iron.

I am, Sir, yours faithfully,

JOHN F. WILKINSON.

The Royal Infirmary, Manchester, July 12th, 1933.

THE USE OF AVERTIN

To the Editor of THE LANCET

SIR,—With reference to the accounts in the press of the inquest on the woman who died at Guy's Hospital after enucleation of tonsils, I wish to say most clearly that the statement that I introduced avertin into this country is incorrect. The report on the use of this drug for anæsthesia was published by Dr. Joseph Blomfield and myself on behalf of the Anæsthetics Committee of the Medical Research Council, and contained the conclusions of other investigators besides ourselves.

Further, I must correct the impression that I administered the anæsthetic. In fact, I was not even aware that an operation was to be or had been performed on this patient.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

York-terrace, N.W., July 15th, 1933.

THE POOR-LAW SICK WARDS

To the Editor of THE LANCET

SIR,—There may be perhaps, in England and Wales, some 40,000 surgical and acute sick accommodated partly in voluntary hospitals and partly in former poor-law sick wards; some 40,000 chronic sick accommodated in former poor-law sick wards; and some 40,000 persons, somewhat feeble but not so much so as to need nursing, accommodated in the non-sick adult wards of poor-law institutions (workhouses).

In your issue of May 27th I urged that the first outline of any orderly classification for a national system of hospitals must be a classification of surgical and acute in one class as against chronic in the other, whereas the only outcome of the Local Government Act of 1929 has been the device of associating some poor-law sick wards with one Act of Parliament and some with another—a device which is worse than useless because it deceptively suggests that some reasoned classification has been effected thereby. I further urged that as regards the three classes mentioned above, if the management or oversight of them must be shared out between two committees of the town council and two corresponding departments of the town hall staff—viz., public assistance and public health—then economy and administrative convenience require that the management of the chronic wards should be associated more closely with that of the non-sick poor-law wards than with that of the surgical and acute wards.

To this second proposition Dr. MacWilliam objects in your issue of July 8th, urging that the association between the chronic and the acute wards should be the closer of the two in order that transfers of patients to and fro between the chronic and the acute wards should be facilitated. To this I would reply that the transfers to and fro between the chronic wards and the non-sick poor-law wards are often the more numerous, and from the point of view of public economy are the more important. If the chronic wards are dissociated from the non-sick poor-law wards the chronic wards tend to become expensively encumbered with patients who do not really need nursing at all, and who would do as well or better in the non-sick wards. Further, in the greater part of the country there is not much choice in the matter. In London indeed and in half a dozen of the biggest towns there are a sufficient number of separate and suitable institutions to make it possible to make either arrangement, but we must necessarily use the buildings which exist, and in most towns the wards for surgical and acute patients stand apart in a voluntary hospital, whereas the wards for the chronic sick and those for the non-sick stand together as two wings of one poor-law institution.

It is unfortunate that the staff of a chronic hospital is so often desirous of undertaking the work of an acute hospital The staff tend to ask for the expensive apparatus which is only necessary for surgical and acute work. The councillors who form the managing committee of the hospital, not being medical men, find it very difficult to stand up against the specious argument that the newly so-named Public Health Act hospital ought to be at least as lavishly equipped as the neighbouring voluntary hospital. They will continue to encounter this difficulty until each hospital defines its medical aim and uses a title which indicates it instead of a title which merely indicates association with a certain Act of Parliament.

Dr. MacWilliam concludes his letter by alluding to "the faults of the old workhouse infirmaries." He does not specify any faults. No doubt workhouse infirmaries could and can be developed in various ways if the public are prepared to find more money, but this country has no need to be ashamed of the sick wards which they have been providing for many years past for the chronic aged sick, which compare favourably with those of other countries.

I am, Sir, yours faithfully,

W. D. BUSHELL,

Barrister-at-Law; formerly one of the General Inspectors of the Ministry of Health.

Cambridge, July 15th, 1933.

SUPRARENAL EXTRACTS

To the Editor of THE LANCET

SIR,—In your issue of July 8th is reported a meeting of the London Insurance Committee and a discussion on the administration of suprarenal cortical extract which took place; the value of the treatment is there questioned. There is definite and undeniable evidence in recent literature that this extract can save life when given in the crises of Addison's disease, and evidence is also accumulating that daily injections will keep patients alive and restore working capacity over a long period. This treatment has passed beyond the experimental stage, but extensive clinical trial is needed and this is hindered by present prices of the extract. No other preparation has proved to be of certain efficacy. A daily injection, sufficient to maintain improvement, costs anything from 10*s.* to 45*s.* a dose, and in emergency £10 to £20 worth

of material may be required within a day or two. A supply of extract at lower cost is urgently needed for prolonged clinical trial under expert supervision. It was suggested in the report that the proper place for the trial of such treatment is in hospitals, but though, in emergency, free treatment may be provided, the greater financial problem is the provision of maintenance treatment, as is required in all cases of glandular deficiency.

We are much indebted to the manufacturers for putting this extract on the market, and the price must eventually be regulated by the cost of manufacture and the demand, which is no doubt at the present time exceedingly small; but if by increased use of the extract the present high mortality of Addison's disease can be reduced, the number of the suprarenal-deficient population will probably be found to be not inconsiderable. There must also exist cases of lesser degrees of deficiency which escape recognition but will be diagnosed more readily when attention is focused on the disease by the provision of a method of treatment. Further, when the extract is used to-day in prolonged treatment, the smallest dose that relieves symptoms is given; probably much larger doses would give better results and restore patients to working capacity.

Is it too much to hope that the cost of this life-saving preparation may be reduced, as has been the case with insulin, to a price which will make it available for all who need it?

I am, Sir, yours faithfully,

DOROTHY C. HARE.

Weymouth-street, W., July 13th, 1933.

THE ROYAL SOCIETY DISCUSSION ON "EXPERIMENTAL PRODUCTION OF MALIGNANT TUMOURS"

To the Editor of THE LANCET

SIR,—In reply to Mr. Sampson Handley's letter in your issue of July 8th, I should like to be allowed to make the following comments. The limitations of the treatment of the subject in my opening paper were naturally imposed upon me by the scope of the discussion arranged by the Royal Society. There is no need for anyone, whether a member of the executive committee of the Imperial Cancer Research Fund or anyone else, to guess at my opinions on any aspect of cancer research. I think I have earned—and prize—a reputation for candour in scientific matters. So far as the content of Mr. Handley's letter is concerned, it is so fair a summary of my paper that I need do no more than express agreement. The last paragraph will not create any great disturbance in the minds of those who know Mr. Handley's affection for his lymph stasis hypothesis.

Mr. Handley, as a member of the executive committee, should know that he is in error in stating that the investigations here preclude the study of cancer in man by histological methods. The Imperial Cancer Research Fund appeals to the public as an organisation whose policy is the investigation of cancer as it occurs in man and animals, by every method which promises new information. The annual and scientific reports show how they endeavour to pursue this policy. I regret that such an implied criticism of the policy and conduct of the investigations of this Fund should have been put forward by a member of the executive committee without previous discussion with those responsible for the conduct of the investigations.

I am, Sir, yours faithfully,

J. A. MURRAY,

July 12th, 1933. Director, Imperial Cancer Research Fund.

IN HONOUR OF DR. G. F. STILL

To the Editor of THE LANCET

SIR,—In 1899 Dr. Still was appointed to the honorary staff of King's College Hospital. Up to that time no physician for diseases of children exclusively had ever been appointed at any of the teaching hospitals in London or indeed elsewhere. A children's ward had been in existence but it had been under the care of the gynæcologist or the most junior member of the staff who was required to hold it until he was promoted to the care of adults. Although there were children's hospitals in London, including Great Ormond-street, where Dr. Still has been physician, King's College Hospital was the first with a medical school to establish a special department for diseases of children. The example has been followed by many hospitals with medical schools. The recent White House report on children in hospitals shows the extent to which the importance of the subject is now appreciated in the United States. To those who have not been able to come into contact with the inspiring enthusiasm of Dr. Still's personal devotion to the welfare of children, his published works are available.

The impending retirement of Dr. Still from hospital work has seemed to some of his friends to be a suitable opportunity for some recognition of his pioneer work. We believe that there are many who would desire to do honour to him as a great physician and lover of children. We invite subscriptions for a presentation portrait of him. Mr. Gerald Kelly, R.A., has generously consented to give the picture provided that a sum of not less than £500 is subscribed for the endowment, with Dr. Still's approval, of a "Dr. Still" cot at King's College Hospital. Subscriptions may be addressed to the treasurer of the Dr. Still Portrait Fund, King's College Hospital, S.E. 5. A list of donors (but not amounts) will be presented to Dr. Still with the portrait.

We are, Sir, yours faithfully,

(Signed) BEATTY,
Chairman of King's College Hospital.
BLANESBURGH,
Chairman of the Delegacy of King's College.
CHARLTON BRISCOE,
Senior Physician to King's College Hospital.
J. F. CAMERON,
Master of Gonville and Caius College, Cambridge.
J. A. DRAKE,
Dean of the Medical School of King's College Hospital.
CHARLES A. FIFE,
President of the American Pædiatric Society.
A. DINGWALL FORDYCE,
President of the British Pædiatric Association.
WILLIAM FRY,
Chairman of Dr. Barnardo's Homes.
W. GILLIATT,
Chairman of the Medical Board of King's College Hospital.
W. R. HALLIDAY,
Principal of King's College.
ESTHER HAMBLEDEN.
THOMAS HOLLAND,
Vice-Chancellor and Principal of Edinburgh University.
SPENCER LEESON,
Head Master of Merchant Taylors' School.
V. WARREN LOW,
President of the Royal Society of Medicine.
MACMILLAN,
Chairman of Great Ormond-street Children's Hospital.
FREDERICK F. TISDALL,
President of the Canadian Society for the Study of Diseases of Children.
FRANK WHITBREAD,
Treasurer of Guy's Hospital.

July 18th, 1933.

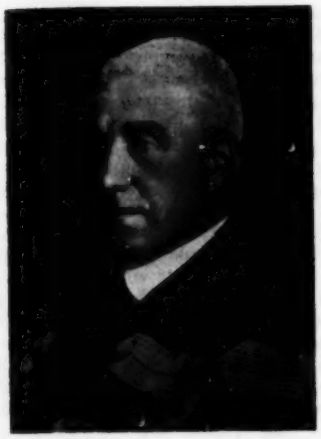
OBITUARY

SIR JAMES CRAIG, M.D. Dubl.

PAST PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND; KING'S PROFESSOR OF THE PRACTICE OF MEDICINE, DUBLIN UNIVERSITY

THE death of Sir James Craig on July 12th came as a shock to his friends. His health for the past six months had given rise to anxiety, but he had returned to a fair measure of activity recently, and few had known that a serious condition developed a few days before his death. He was some 72 years of age.

James Craig came to Trinity College, Dublin, in the early 'eighties from Coleraine Academy, and he graduated in medicine and surgery in 1885. He became a Fellow of the Royal College of Physicians in 1891, was registrar of the College from 1897 to 1910, and president from 1919 to 1921. A year after his graduation he had been appointed assistant physician to the Meath Hospital, and in 1892 he was promoted to the full staff. On his appointment as King's professor of the practice of medicine in 1910 he migrated to Sir Patrick Dun's Hospital. He continued in his duties as King's professor and as physician to Dun's to his death. Throughout his life he took an active part in the business and public affairs of the profession. He was for several years a member of the council of the Irish Medical Association. He was for ten years—1895–1905—hon. secretary of the Leinster branch of the British Medical Association and later its president, and for some years he was a member of the council of the Association. In addition to his teaching appointments he was consulting physician to several hospitals and other institutions. He held the appointment of physician-in-ordinary to the last Lord Lieutenant of Ireland, Lord FitzAlan, who conferred on him the honour of knighthood. He was general secretary of the Royal Academy of Medicine in Ireland from 1904 to 1910, and subsequently its president.



SIR JAMES CRAIG

[*Photograph by Lafayette*

In 1921 Sir James Craig was elected as one of the four representatives of Dublin University in the Parliament of Southern Ireland. When the Irish Free State was established and the representation of the University was reduced to three, he retained his seat, and he was an active and useful member of the Dáil up to his death. As one of the few medical members of that body he was recognised as speaking with authority in all matters concerning health. He introduced the first Public Charitable Hospitals Bill which legalised sweepstakes, and as he remarked lately "he was appalled at the result of his introduction of that measure." A Bill intended to relieve the temporary embarrassment of a few hospitals has led to a revolution in the whole hospital system of the country. Only a few weeks ago Sir James was among the most active of the critics in the Dáil of the amending Bill at present under discussion. Apart from his authoritative position in regard to health and hospital affairs, Craig's goodwill, kindliness, and industry made him a respected and well-liked member of the Dáil. Mr. De Valera, in expressing the regrets of the House in his death, paid his memory a graceful tribute. His death leaves a vacancy in the representation of Dublin University.

However busy he might be, Sir James Craig always found time to take his full share of work for his profession, and he was an excellent man on a committee. He was a good judge of what was practicable, and a shrewd observer of men and affairs. He was, moreover, a man of liberal opinions and ready to recognise the merits of those with whom he might differ, and he was at home with all sorts of people of all opinions and classes. In his work in the school and the hospital he showed sincere interest in the life and activities of his students. He looked at things from their point of view, and he loved to be associated with them in their sports. The college clubs had in him a generous supporter, and on a fine afternoon if his work permitted he enjoyed nothing better than to sit in the College park watching a cricket match or running athletic competitions or, indeed, whatever might be going on.

Sir James Craig leaves a widow, three sons, and a daughter. His two elder sons, who were twins, are members of the medical profession.

JOHN HILL ABRAM, M.D., F.R.C.P. Lond.

EMERITUS PROFESSOR OF MEDICINE, UNIVERSITY OF LIVERPOOL

WE regret to announce the death of Dr. Hill Abram which occurred after a short illness at his residence in Hoylake on July 13th, in his 70th year.

John Hill Abram was born at Waterloo, near Liverpool, his father being a corn merchant in the city. He was educated at the Liverpool Institute under the Rev. John Sephton, and entered the Liverpool Royal Infirmary as a medical student in 1882, when he immediately showed evidence of his quality, gaining the Derby exhibition in clinical medicine and surgery. He continued his studies at University College, London, and qualified as M.R.C.S. Eng. in 1887. Later he graduated in medicine as M.B. Lond. with first-class honours and proceeded to the M.D. in the following year—i.e., 1889. He returned to the Liverpool Infirmary as house physician, and throughout the rest of his life was connected with that institution. After a period as medical tutor he was elected honorary physician in 1902, while at the same time he was pathologist and later assistant physician to the Stanley

DR. HILL ABRAM

[*Photograph by Chidley*

Hospital. In 1890 he was appointed assistant lecturer and demonstrator in pathology at University College, and in this position, which he held for many years, he obtained an unusually wide experience of disease and a sound knowledge of morbid anatomy, a knowledge which proved invaluable to him as a teacher and clinician. He became professor of therapeutics in 1906, in which year he was elected F.R.C.P. Lond ; later he succeeded Prof. T. R. Glynn in the chair of medicine, which position he held up to 1924. As a teacher he was dogmatic and incisive, and his clear presentation of the clinical pictures of disease was much appreciated by his students. By virtue of his sound dogmatism and incisiveness the truths he taught were stamped indelibly on the attention of his hearers. His mind was critical rather than constructive and this very faculty made him a most valuable member of every committee on which he served, for he was quick to perceive the essentials of a problem, and when the time came for a decision he gave his opinion with no uncertain voice. In 1922–23 Abram was president of the Liverpool Medical Institution, and in 1928 he presided over the meeting of the Association of British Physicians, an honour which he felt and which he had thoroughly earned. For three years—1924–26—he served on the council of the Royal College of Physicians and also acted as its representative on the court of the University of Liverpool. At the time of his death he was president of the Liverpool University Club.

After a very busy and strenuous life Dr. Abram welcomed the leisure which followed his retirement from practice because it enabled him to devote more time to those interests which he had at heart. For decades his name had been a household word in Lancashire, Cheshire, and North Wales, and amongst his medical brethren he was recognised as a sound clinician, upholding the highest traditions of the profession. Those who knew Dr. Abram most intimately were aware of an unexpected simplicity in his nature which carried with it a special appeal, and which certainly endeared him to his students. "There can be no doubt that his life was one of happiness," writes a friend. "Successful in his career he reached the goal on which he had set his heart and found delight in the affectionate regard of his students, while happily conscious of the respect and confidence of his colleagues. Although in his 70th year there was an alertness and vigour both in mind and body which seemed to promise for him further years of happiness on his retirement from practice." He had gradually acquired a small but choice collection representative of the English school of water-colourists, and he was happy in serving as a coöpted member of the libraries, museums, and arts committee of Birkenhead, where his coöperation was much valued. He was unmarried, but throughout his life enjoyed the devotion of his sister, to whom all sympathy goes out in her loss.

JAMES ALEXANDER MITCHELL, M.B. Glasg., D.P.H.

Dr. Mitchell, who died at Rondebosch on June 12th, had been chief health officer for the Union of South Africa since 1918 until his retirement owing to ill health just over a year ago. He was also secretary, since its creation in 1920, of the department of public health. Dr. Mitchell was born in Co. Tyrone in 1876, and was educated at the Academic Institution in Londonderry, taking his medical course at Glasgow. Soon after qualifying in 1898 he went out on Lord Lister's nomination as research pathologist to the leper asylum on Robben Island. When he was there bubonic plague invaded the colony, and he was appointed medical superintendent to the plague hospital and quarantine station at Maitland during the severe epidemic of 1901. This soon led on to his becoming assistant medical officer of health for the Cape Colony, when his administrative ability had full scope. Amongst other appointments he held that of deputy chairman to the Union council of public health, chairman to the Union leprosy advisory committee, and membership of the South African medical council. During the war he held rank as lieutenant-colonel with the South African Medical Corps, acting as A.D.M.S. on lines of communication. He was a fluent writer on public health subjects, one of his best-known papers dealing with the growth of the native races in South Africa. Recently he was instrumental in promoting legislation on health and medical registration, and for his devoted work in this direction his name will stand high in the annals of medicine in the Union.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Nutrition of School Children

VIEW OF THE BOARD OF EDUCATION

On July 12th in the House of Commons on a vote for the salaries and expenses of the Board of Education, Mr. RAMSBOTHAM (Parliamentary Secretary to the Board) spoke of the relation of education to the unemployment problem ; the steps that were being taken could be divided into two categories. The first was to prevent the ill-effects upon the children of the unemployment of their parents, and the second was to mitigate the effect of unemployment on the children themselves after they had left school. With regard to the first category, the Board had somewhat increased the item for special medical services, and they were prepared to approve of any urgently needed extensions when the medical arrangements were obviously incomplete. Another measure was concerned with the provision of meals. The same provision had been made in this respect as was made last year. The reason was that after the most careful examination they did not find evidence of increasing malnutrition. There again, however, if the local authorities had good grounds for extending their arrangements for the provision of meals, they would find the Board very sympathetic.

The statement, he went on, that medical officers of health had reported a steady deterioration in the children attending the schools was quite inaccurate. For instance, the chief medical officer of the Board, Sir George Newman, in his report last autumn, said that there was as yet no evidence of a lowering of health or of impaired physique. The report of the chief medical officer was borne out by the reports of the school medical officers which the Board had received brought up to Christmas, 1932, and in point of fact out of 268 reports received up to date only 17 gave any instances of increasing malnutrition. The report of the school medical officer for London had recently been published. According to it only one more in a thousand children was found to have subnormal nutrition compared with 1931, and the report pointed out that this fractional increase was due to the effects of a widespread epidemic of measles which lowered the vitality of the younger children. The report went on to show that the decrease in the percentage of subnormal nutrition for 1932 was quite

substantial as compared with 1925. Children over 7 were found to be in better condition in 1932 than in 1931. These figures included all children with nutrition below the average. They were not confined to children suffering from severe malnutrition. Figures were given showing that out of 180,000 children examined only 29 were found to be very ill-nourished. Malnutrition in a good many cases was due to organic defects and not necessarily to inability to obtain food. With regard to other areas, many of them had suffered more distress than London, but none the less there was no evidence of diminution in health. For 1932, as compared with 1931, some areas showed increases and others decreases, and on balance there was practically no change. It was interesting to observe that decreases were shown in Glamorganshire, Monmouthshire, Cardiff, and Newport. Broadly speaking, his information went to show that throughout the country as a whole the number of cases of malnutrition had fallen from 11·2 per 1000 in 1931 to 10·7 in 1932. It appeared that on the whole the tide had definitely turned.

SOME DOUBTS IN MEMBERS' MINDS

Mr. MORGAN JONES said he was sorry that Mr. Ramsbotham had made no reference to the nursery school movement. If the hon. gentleman's answer was that in times like these the nation could not afford such things he (Mr. Morgan Jones) would say that the nation could not afford to be indifferent to the requirements of the children, not merely on the educational side, but the requirements of children at a delicate age before they entered on the formal course in the elementary schools. The statistics which Sir George Newman so admirably presented year after year indicated that children at the early stage of formal elementary school life were often found by the very beneficent school medical service to be in a condition which, if attended to medically at an earlier age, would avoid a good deal of subsequent expenditure of public money. He (Mr. Morgan Jones) was very sorry that this very mistaken policy of economy, which he called educational waste, had arrested the development of the nursery school movement, though he hoped only for a very short time. He had never, either in that House or outside, committed himself to the statement that there was a very large amount of malnutrition among children, partly because he had not the information at his disposal, but he was rather surprised at the statement of Mr. Ramsbotham that day. He knew the area of South Wales pretty well, where there was a very great amount of poverty and economic distress. He confessed that he found it very difficult to believe —though he did not throw any doubt on the certificates received by the Board from medical officers— that there was no distress or need for special provision for feeding the children in those areas. The malnutrition of mothers did not concern the Board of Education primarily, except to this degree, that if a case existed for the provision of nutrition for the child through the medium of the local education authorities such feeding would save malnutrition on the part of the mothers. He hoped that the Board would keep their eyes on the question of the physical necessities of the children in such areas as South Wales.

Mr. COVE referred to the continued bad condition of many schools in the country. About 1925, he said, an inspection took place and the schools were divided into three categories—A, B, and C. A total of 2827 schools were black-listed. In category A, the schools were very bad and the Board agreed that they were incapable of improvement and should be razed to the ground. There were 679 such schools. But in spite of that one-fifth of these schools had been patched up. Only two-fifths of these bad schools had been closed since 1925, and the other two-fifths with their unremedied defects were still in existence. Was it a tale of progress that schools dangerous to the health of children should still be in existence by the hundred? Of the schools in category B, which were supposed to need substantial improvement, only one-half had been remedied since 1925. Category C schools needed minor alterations, but 60 per cent. of them had not yet been done. The bulk of the problem provided by the black-listed schools had therefore still to be faced. He was not so satisfied as Mr. Ramsbotham that there was not malnutrition; as a matter of fact he was afraid that malnutrition did exist to an appreciable degree. He asked the Board of Education not to rely on local reports—he said that without casting any aspersion wholly or solely on the reports of local medical officers—but the Board should instruct their central officers to examine the position. It was the business of the central Government to see that malnutrition did not take place in the child life of the country, and they could not hide behind any local reports. The burden of feeding necessitous children should not be thrown on the local rates. He believed that the results of the Government's policy of economy would be seen in the deterioration of the physique, the crippling of the mental powers, and the starvation of the general outlook of the children, youths, and manhood of the future.

Mr. RAMSBOTHAM, replying to the discussion, said that it was quite impossible for the Board to instruct its own officers to make reports after investigation in particular areas with regard to malnutrition. The Board was bound to rely on the best information it could obtain from the most responsible officials in various areas. As regarded the black-listed schools, in a number of cases they were voluntary schools, and the House was aware of the difficulty of dealing with the matter with the law as it stood. The power of the State to deal with the non-provided schools was strictly limited.

University Degrees Bill

In the House of Lords on Thursday, July 13th, Lord JESSEL moved the second reading of the University Degrees Bill. He said that the former Bill on this subject which he had introduced in their Lordships' House had been criticised because of its bad drafting, and he had therefore withdrawn it and brought forward the present measure. There was nothing to prevent anybody putting certain letters after his name implying that he had a university degree. In the opinion of those who had earned those degrees, and especially the members of the Scientific Workers' Association, it was a great hardship that others should come into the market with unauthorised degrees and cut the ground from under their feet. It was very wrong also that corporations should be allowed to sell these degrees, which deceived a great many people. The Bill said that any corporation which granted these unauthorised degrees should be submitted to a penalty. A penalty was also imposed on "any person who uses or assumes" a degree to which he was not entitled. In the first schedule to the Bill there was a list of the corporations that were allowed to give degrees. First, there was the Archbishop of Canterbury; then followed the various great universities, and there was a provision that if a new university came into being it should have the same powers as existing universities. In the second schedule were stated the various degrees. There had been some criticism made about that. Some of the universities, it was said, might grant degrees other than those already existing, but that, of course, was a Committee point which could easily be put right if the Bill was read a second time. Lord Cecil had made certain well-founded criticisms on the last occasion with regard to the penalties, and he hoped that Lord Cecil would see that his objections had now been removed. Another alteration was that the Bill did not now involve any liability on the President of the Board of Education. It might be said that this was not a matter of great moment, but very few people who had these bogus degrees were ever challenged and they "got away with it" quite happily. Only the other day there was a case in the law courts—Walton *v.* Lief—and in

cross-examination the defendant was asked to explain certain letters after his name. It transpired that M.N.C.A. meant Member Nature Cure Association; that was a degree conferred upon him by the British Society of Naturopaths. There was also a widely circulated pamphlet in which a man called himself D.C.Sc., Physician B., and he went on further to describe himself D.S., D.O. (London), F.R.S. There was no such degree in the University of London; yet this sales circular was spread broadcast and induced many people to buy this article in the belief that it was vouched for by some eminent medical authority. He thought that the Bill would deal with a great scandal, and would be of great benefit to those who were really entitled to the degrees for which they had worked hard, and would stop the sale of unauthorised degrees.

Lord PONSONBY supported the Bill.

The Earl of IDDESLEIGH said he was doubtful if the Bill would effectively benefit the public, because a man would still be entitled to use the letters of a bogus degree obtained abroad provided he placed the name of the bogus university after those letters. As many of these bogus universities had extremely convincing names, greatly resembling the names of real universities, he doubted whether the public would be much protected by the Bill. He hoped Lord Jessel would give some consideration to these objections, and perhaps amend the Bill before the Committee stage.

Lord IRWIN (President of the Board of Education) said there had not yet been any opportunity of consulting the universities about the Bill, and he had no doubt that it would be for their convenience to have more time to examine the proposals. He was glad, therefore, that the Committee stage would not be taken until after the summer adjournment. If the Bill was read a second time the Home Secretary and the Lord President of the Council would desire to have certain amendments considered on the Committee stage. Subject to these considerations the Government had no desire to oppose the second reading.

The Bill was read a second time.

Medical Services in India

On July 17th in the House of Commons on a vote for the Department of the Secretary of State for India, Sir SAMUEL HOARE said that an almost incredible amount of suffering and inefficiency in many Eastern countries was due to the low standard of living. Any efforts, therefore, that were successful in raising the standard of health redounded not only to the credit of the men who made those efforts but in a special manner to the future prosperity of the country in which those efforts were made. In India they had a very fine record in the field of health administration. He was not sure if hon. Members always realised the debt of gratitude that for many years past not only India but the whole world had owed to the pioneer work of the Indian Medical Service. Many of the most notable achievements in the field of surgery and medicine had been due to the experiments and the experience of officers in the Indian Medical Service. During the last 12 months, in spite of many exceptional difficulties—the difficulty, for instance, of finding the funds necessary for medical research and medical administration—the record had been on the whole very satisfactory. A great Institute of Preventive Medicine had been opened in Calcutta. Its foundation was due in the first instance to the beneficence of Mr. Rockefeller, and its maintenance came within the responsibility of the Government of India. He believed that the work of this Institute was going to be of immense value in the preventive field in India in the future. Certain experiments had recently been made in India with a view, first, to controlling the spread of malaria; and, secondly, to preventing the relapses of the patient after he had begun to recover. The scourge of malaria was so great in India that probably in any given year there might be as many as 10,000,000 people being treated for that disease. It was probably within the mark to say that between 1,000,000 and 2,000,000 people died from malaria in India every year. What an appalling scourge, and what an opportunity for the development of medical science! He was glad to be able to tell the Committee that a new drug had been discovered, called atebrin, and, as far as his advisers could judge, it looked as though it would be most effective in preventing a relapse, which had always been the danger of malaria epidemics. He gave those two instances to the Committee—he could give many others—to show how very active were the efforts of the Indian Medical Service in the field of health and how, year after year, they were meeting with the success they deserved. (Cheers.) They could not control the weather, but they could to a great extent control its effects. It was within the memory of everyone that India was periodically subjected to terrible famine due to drought, which swept away millions of its population. He was glad that, as a result of the work that had been carried out in the field of irrigation, that chapter was for ever ended. They could not control droughts, but they could ensure by a system of irrigation that the canals should still be filled with water even in the dry seasons, and work was being continued on various irrigation projects.

TRANSFER OF HOSPITALS

The Duchess of ATHOLL said that Sir S. Hoare had praised the health administration of India, but he had said very little about the hospitals. She had had brought to her notice lately by a very senior officer of the health service in one of the Provinces, who had recently retired, the fact that an increasing number of hospitals had passed under the control of local authorities, with a very grave loss of efficiency. They would all agree with the praise which the Secretary of State had given to the Indian Medical Service, but the right hon. gentleman had not reminded the House how largely the Indian Medical Service was being replaced by the provincial medical service, or the British medical officer in the Indian Medical Service by the Indian. It had lately been said to her by more than one person who had lived long in India that the rank and file were very reluctant to go to a hospital of which the presiding officer was not a European. While many Indians made admirable medical officers on the technical side they tended to be below the British standard in the administration and control of a staff.

After further debate,

Mr. BUTLER, Under-Secretary for India, replying to the discussion, said that there had lately been a definite improvement in the recruitment of Government medical officers so far as numbers were concerned, and on the whole the quality of the candidates had also improved. The number of European candidates had increased from 13 in 1931 to 23 in 1932, and during the first six months of the present year 27 had already been appointed. There was every possibility of a larger recruitment this year than during any year since the war.

The debate was adjourned.

Road Accidents and Payment to Hospitals

In the House of Lords, on July 18th, the amendments proposed by the Select Committee to Lord Danesfort's Road Traffic (Compensation for Accidents) Bill, were considered.

In moving that the House should go into Committee on the amendments, Lord DANESFORT said that as the Bill emerged from the Select Committee, Clause 3 amended Section 36 of the Road Traffic Act, 1930, with respect to payments to hospitals. The clause now provided that where a payment was made by the authorised user or owner of a vehicle in respect of the death of, or bodily injury to, any person through the use of the vehicle, and the dead or injured person had, to the knowledge of the authorised insurer or owner, received treatment at a hospital, the hospital expenses reasonably

incurred in such treatment should be paid by the authorised insurer or owner, after deducting from such expenses any money actually received by the hospital in payment of a specific charge for such treatment.

The Earl of PLYMOUTH said that the Government regarded the report of the Select Committee as being a very valuable provision towards the solution of the admittedly difficult problem of compensation in the case of motor accidents. The Government had not yet had an opportunity to consider the clauses, but he thought the Select Committee had considerably improved the Bill. There was, however, no hope of any legislation this year.

The Committee agreed with the amendments of the Select Committee.

Royal Assent

In the House of Lords on July 18th the Essex County Council Bill and the Rent and Mortgage Increase Restrictions (Amendment) Bill received the Royal Assent.

HOUSE OF COMMONS

WEDNESDAY, JULY 12TH

London Omnibus Schedules and Public Safety

Mr. LOVAT-FRASER asked the Minister of Transport (1) if he was satisfied that the new time schedules adopted by the London General Omnibus Company were being maintained without endangering public safety; and (2) if he was aware that since the speed-up of London motor omnibuses three drivers had collapsed at the wheel and one died on the way to the hospital; whether the death- and sickness-rates among omnibus drivers had gone up since the speed-up; and whether the number of accidents involving omnibuses had increased.—Mr. OLIVER STANLEY replied: I am informed that the introduction of the full programme of new time-tables was spread over the period October, 1932, to February, 1933. Whilst there has been a slight increase in the number of collisions in the first six months of this year compared with 1932, the figures are appreciably better than for 1931. There appears to be no evidence to suggest that the new time schedules have in any way endangered public safety. I am also informed that the death-rate amongst drivers was less in the six months ended June, 1933, than in the two preceding years, and, although four drivers have died recently whilst on duty, I understand that in none of these cases was the nature of the work held to be responsible for the fatality. The average sickness during the periods October-December, 1932, and March-June, 1933, was lower than any corresponding period for the previous three years. The incidence of the influenza epidemic in January and February last precludes useful comparison with the sickness in those months in previous years.

Age of Marriage and Consent in Palestine

Miss RATHBONE asked the Secretary of State for the Colonies (1) whether his attention had been directed to paragraph 182, chapter 18, of the Criminal Code Bill, 1933, for Palestine, which proposed to fix a minimum legal age for the marriage of females at 13, but to permit marriage below this age under specified conditions; whether he was aware that the proposal to fix so low a marriage age, and even then to make it subject to a wide range of exemptions, was arousing dismay among many in Palestine who were anxious for the suppression of child marriage; and what action he proposed to take about it; (2) whether he would procure the appointment of a committee in Palestine, including representatives of medical opinion and of women's opinion, to investigate and report as to the extent and effects, physical and social, of child marriage in that territory.—Sir P. CUNLIFFE-LISTER replied: My attention has already been drawn to the provision in the Palestine Criminal Code Bill to which the hon. Member refers, and I am in communication with the High Commissioner for Palestine on the subject. No decision will be taken until the matter, including the question of appointing a local committee, has been fully considered in consultation with the High Commissioner.

THURSDAY, JULY 13TH

Boils and Carbuncles among Miners

Mr. TINKER asked the Home Secretary if his attention had been drawn to the condition of coal-miners who, through working in hot mines, were subject to boils and carbuncles, which in many cases caused incapacity and loss of work; and if he would inquire into it to see if there was sufficient evidence to include this in the schedule of diseases under the Workmen's Compensation Acts.—Mr. HACKING (Under Secretary, Home Office) replied: My right honourable friend has not yet had occasion to consider this question, but he will consult the Secretary for Mines in the matter.

Cost of Mental Hospitals

Mr. DAVID GRENFELL asked the Minister of Health the items included in the Board of Control's estimate of £500 as the capital cost of providing a bed in a mental hospital; what new buildings had been erected in the past year under their supervision; and what further buildings were in contemplation.—Sir E. HILTON YOUNG replied: The answer is as follows: the estimate of £500 was made in 1931, and I am advised that the comparable figure to-day would be about £440. The figure was for a bed in a complete new mental hospital, and included a proportion of the estimated initial cost of the following items: (*a*) Patients' residential accommodation; (*b*) ancillary premises such as church, workshops, recreation hall, laundry, stores, kitchens, offices, power station; (*c*) accommodation for residential staff; (*d*) engineering services for heating, lighting, drainage, and water-supply; (*e*) roads and laying out of grounds. It did not cover cost of land or furnishing. Figures are not available for the new buildings erected in 1932, and I am not in a position to say what further buildings are in contemplation. In 1932 the Board of Control approved plans for the provision of 979 beds, and during the first six months of the present year plans for 999 beds, and they have under consideration plans for approximately another 3000 beds. These schemes are, however, with very few exceptions, for additions or alterations to existing mental hospitals, and the cost will not approach the sum of £500 per bed.

Public Assistance (Expenditure)

Mr. TOM SMITH asked the Minister of Health the total expenditure incurred in public assistance to able-bodied poor in Leeds, Sheffield, Rotherham, and Barnsley, for each of the last five years respectively.—Sir E. HILTON YOUNG replied: The returns furnished to my department do not show separately the expenditure on out-relief to the able-bodied poor, but the following statement shows the expenditure on out-relief to persons ordinarily engaged in some regular occupation and their dependants during each of the last three financial years:—

Year ending March 31st.	Expenditure on out-relief in money and kind given by the councils of the undermentioned county boroughs to persons ordinarily engaged in some regular occupation and their dependants.			
	Leeds.	Sheffield.	Rotherham.	Barnsley.
	£	£	£	£
1931	71,930	189,355	13,109	25,816
1932	81,479	295,102	16,118	13,336
1933 (approx.)	128,300	436,000	23,900	22,800

The unions which, before the operation of the Local Government Act, 1929, included the areas of the county boroughs mentioned were not co-extensive with those boroughs, and exactly corresponding figures cannot, therefore, be furnished for the years ending March 31st, 1929 and 1930.

Health Insurance and Medical Benefit

Mr. KIRKWOOD asked the Minister of Health whether he would take steps to preserve the right of medical benefit to a group of persons suffering from prolonged unemployment whose right to benefit would otherwise cease at December, 1933.—Sir E. HILTON YOUNG replied: No, Sir. As I have said in reply to previous questions,

this matter was fully debated during the passage of the National Health Insurance Act of last year, and the Government are not prepared to reopen it.

Block Grants Policy

Mr. MAINWARING asked the Minister of Health whether, in view of the uneven manner in which the incidence of certain services fell upon local authorities, he was prepared to reconsider the whole system of block grants.—Sir E. HILTON YOUNG replied: No, Sir. The distribution of the block grant under the Local Government Act, 1929, is made under a formula devised to meet the varying needs of local authorities, and the Act itself provides for an investigation of the working before the end of the second fixed grant period.

MONDAY, JULY 17TH

Medical Arrangements for Deported Indian Prisoners

Mr. DAVID GRENFELL asked the Secretary of State for India whether the government of India had received any report from Colonel Barker, inspector-general of prisons, Punjab, as a result of his mission to the Andamans to inquire into the medical arrangements there for prisoners on hunger strike; and whether he could state the conclusions of the report.—Sir S. HOARE replied: This officer was sent not to make a formal inquiry and present a report, but to consult with, and advise, the local authorities. I have not yet received any detailed information regarding his visit.

Medical Advice to Ships by Wireless

Colonel SANDEMAN ALLEN asked the Postmaster-General whether he would arrange that British vessels would be able to ask for medical advice through coast wireless stations free of all wireless charges, in conformity with Sweden and other nations.—Sir KINGSLEY WOOD replied: The practice varies in different countries. Some, like Sweden, make no charge for transmitting radiotelegrams asking for medical advice; in others, including France, Germany, and Great Britain, such messages are charged for. Under Section 34 of the Merchant Shipping Act, 1906, the owner of a British ship is liable for the expense of providing medical advice for sick or injured members of the crew; and I do not think there is any justification for transferring the cost of messages asking for such advice from the shipowner to public funds.

Women Employed in Indian Coal Mines

Mr. TOM SMITH asked the Secretary of State for India how many women were employed underground in coal-mines in Bengal, Bihar, Orissa, and the Central Provinces, in 1930, 1931, and 1932 respectively.—Sir S. HOARE replied: The number of women employed underground in coal-mines in Bengal, Bihar, and Orissa, and the Central Provinces in 1931 was 16,632, as compared with 18,287 in 1930. Figures for 1932 and 1933 are not yet available.

Spirits Distilled in England and Scotland

Dr. SALTER asked the Chancellor of the Exchequer the number of proof gallons of spirits distilled in England and Scotland during the year ended March 31st, 1933.—Mr. HORE-BELISHA (Financial Secretary to the Treasury) replied: The number of proof gallons of spirits distilled in England and Northern Ireland and in Scotland during the year ended March 31st, 1933, was as follows:—

	Quantity distilled. Proof gallons.
England and Northern Ireland ..	25,109,505
Scotland	5,926,014
Total, United Kingdom	31,035,519

TUESDAY, JULY 18TH

Public Health Services in Scotland

Mr. GUY asked the Secretary of State for Scotland whether the committee of inquiry into public health services had commenced its investigations.—Mr. SKELTON replied: The first meeting of the committee on Scottish Health Services has been convened for July 28th.

INTERNATIONAL SOCIETY OF UROLOGY

THE fifth triennial congress of the society was held at the house of the Royal Society of Medicine, 1, Wimpole-street, under the presidency of Sir John Thomson-Walker, from July 11th to 15th. It was attended by a large number of distinguished urologists; altogether 19 nations were represented.

The membership of the society is strictly limited to about 400. A definite quota is allotted to each nation, which it is not allowed to exceed. The quota for Great Britain is 40, that for the United States is 50; members belonging to smaller nations may be limited to 10 or even 5. It is customary to select three subjects for discussion at each congress, which are announced on the last day of the preceding congress. The opening papers, which are designed to be authoritative résumés of our present-day knowledge of the subject, are printed and distributed to the members before the congress meets. The remarks of speakers in the discussions are collected and printed in a second volume of the proceedings.

The first subject selected was

TUMOURS OF THE RENAL PELVIS AND URETER

It was introduced by Prof. Salvador Pascual (Madrid), Prof. Van den Branden (Brussels), and Mr. J. Swift Joly (London). Seventeen members took part in the subsequent discussion. The conclusions reached were: that three-quarters of these tumours are papillary, and one-quarter are solid infiltrating growths; about half the first group are considered to be benign on histological examination, but all of them are potentially malignant; these tumours have a great tendency to produce secondary growths in the lower portions of the urinary tract, and a complete nephro-ureterectomy offers the best chance of a "cure." The solid infiltrating tumours are frequently associated with stone and infection of the kidney. They do not tend to give rise to implants in the lower urinary tract, but are very malignant and form extensive metastases in the internal organs, and prolonged survival is very rare.

The second subject was

PYELOGRAPHY BY THE DESCENDING ROUTE

It was introduced by Prof. A. von Lichtenberg (Berlin), Prof. C. Ravasini (Trieste), and Mr. R. Ogier Ward (London). Prof. von Lichtenberg confined himself to the chemical and biological experimental work carried out by himself and his assistants. The clinical side of the question was discussed by the other speakers. The conclusions generally reached were: that descending pyelography is an invaluable addition to our diagnostic methods, since it not only gives a good idea of the anatomical condition of the kidney, but also of its physiological function. In the case of suspected renal tumour it was generally thought that instrumental pyelography gives more information, as here information as to the anatomical changes in the organ is all that is required. Twenty-one members took part in the discussion.

The third subject was the

SURGERY OF THE NECK OF THE BLADDER

The surgery of the ordinary senile prostatic enlargement was definitely excluded. The subject was introduced by Prof. G. Marion (Paris), Prof. J. Weijtlandt (Amsterdam), and Mr. Kenneth Walker (London). Twenty-seven members took part in the discussion. Prof. Marion divided obstruction occurring at the neck of the bladder into two types, the congenital and the acquired. The first type he

considered to be due to hypertrophy of the internal sphincter, analogous to hypertrophy of the pylorus in infants, the second being a sclerosis caused by previous inflammation of the prostate and posterior urethra. He recommended an open operation for the relief of the obstruction, and claimed that it was not only the most efficient method of treatment, but that it was attended with an almost negligible mortality. The other speakers generally advised per-urethral resection of the obstruction, claiming that the results are as good as those obtained by open operation, and that the period of convalescence is considerably shortened.

On the last day of the congress, Dr. Edwin Beer (New York) read a paper on the value of

URETERAL RE-IMPLANTATION IN THE BLADDER

in which he combated the opinion held by many of the French urologists that the kidney tends to atrophy after re-implantation of its ureter. He showed a large series of intravenous pyelograms taken several months after operation, in which he demonstrated that not only does the kidney continue to function, but also that previous dilatation gradually recedes until the renal pelvis and ureter ultimately return to their normal state.

PUBLIC HEALTH SERVICES

School Meals in London

We learn from a report presented to the London County Council on Tuesday last that during the year 1931–32 the Council spent out of the education rates on providing meals for children in elementary and special schools the sum of £106,209, of which £37,655 was recouped from the parents and £1696 from the public assistance account. The Council, it should be remembered, as local education authority has no power to spend public money on meals. Before children are fed out of the education rates a local authority must resolve that they are unable by reason of lack of food to take advantage of the education provided and that private funds are not available or are insufficient to defray the cost. The L.C.C. has passed such a resolution every year since 1909, but of the 350 local education authorities in England and Wales about half have not exercised this power. The number of children in London special schools supplied with meals of one kind or another was 10,000, the parents paying the standard contribution in about 6000 of these. To children in ordinary elementary schools during March, 1933, meals were given as follows:—

	On payment.	Free.
Dinners	1,220	7,648
Milk	14,256	12,256
Cod-liver oil and malt ..	4,085	2,248

In addition about 100,000 children obtained milk in school daily from voluntary milk clubs conducted by the teachers. Liability was accepted by the public assistance committee for the dinners of 497 children referred to under the heading "free" above. The responsibility of deciding which children are in need of school dinners is entrusted to the care committees. Children in need of milk or cod-liver oil are selected by the school doctors. The dinner menus are drawn up by the Council's inspector of domestic economy after consultation with the school medical officer. Sample dinners are submitted to the Council's chemist for testing purity and food value. For some years past the average cost of the raw food in a child's dinner in London has been round about 4*d*. This is the standard charge to parents who are in a position to pay.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 8TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 15 (last week 14); scarlet fever, 2211; diphtheria, 749; enteric fever, 74; acute pneumonia (primary or influenzal), 507; puerperal fever, 40; puerperal pyrexia, 98; cerebro-spinal fever, 24; acute polio-myelitis, 11; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 5; ophthalmia neonatorum, 77. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 11th–12th was as follows: Small-pox, 36 under treatment, 7 under observation (last week 35 and 1 respectively); scarlet fever, 1925; diphtheria, 1653; enteric fever, 14; measles, 519; whooping-cough, 378; puerperal fever, 25 (plus 9 babies); encephalitis lethargica, 251; "other diseases," 216. At St. Margaret's Hospital there were 23 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 22 (1) from measles, 4 (0) from scarlet fever, 27 (2) from whooping-cough, 22 (6) from diphtheria, 35 (5) from diarrhœa and enteritis under two years, and 13 (4) from influenza. The figures in parentheses are those for London itself.

Nottingham and Cardiff each reported one death from enteric fever. Measles was fatal in 5 cases each at Liverpool and Rhondda, 4 at South Shields. Six deaths from whooping-cough occurred at Liverpool, 2 each at Bootle and Salford. Liverpool also reported 4 deaths from diphtheria. Of the deaths from diarrhœa outside London, 6 were reported from Liverpool, 2 each from East Ham, Bradford, Leeds, Manchester, Middlesbrough, Salford, Sheffield, and Sunderland.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 39 per 1000 total births), including 49 in London.

THE CONGRESS ON RENAL INSUFFICIENCY AT EVIAN. The twenty-sixth Voyage d'Études Médicales starts on Sept. 5th at Vals, and the itinerary includes Grenoble, Uriage, Briançon, Challes, and Aix. Geneva, Annecy, and Chamonix will also be visited, the voyage ending on Sept. 17th at Evian. The tour will be under the scientific direction of Prof. Villaret (Paris) the director, Prof. M. Piery (Lyons), a regional director, and Prof. Charbrol (Paris) an assistant director of the V.E.M. The voyage has wisely been made to fit the arrangement for the congress on renal insufficiency at Evian, organised by the Medical Society of Evian, Prof. A. Lemierre acting as president and Dr. Etienne Bernard as secretary-general. A number of authoritative communications have already been promised for discussion at sessions which will take place on the morning and afternoon of Monday and Tuesday, Sept. 18th and 19th and on the morning of Wednesday, 20th. All who intend to make contributions to the debates should address Dr. Bernard at Evian before Sept. 1st. Medical men, French or foreign, will be admitted as congressists upon a subscription of Frs. 100, and from Sept. 10th onwards the railway companies concerned will charge only half fares. Congressists will be received at the Evian hotels during and for a period after the sessions at a special pension rate of Frs. 50 per day, and for those who thus wish to prolong their visit excursions by car have been organised to Chamonix, the Mer de Glace, Interlaken, Lausanne, Geneva, and many other well-known centres. Further information will be given by the Federation of the Health Resorts of France, Tavistock House North, London, W.C.

MEDICAL NEWS

University of Oxford

At recent examinations the following candidates were successful :—

DIPLOMA IN OPHTHALMOLOGY

K. G. Das, Hofmeyr de Villiers, D. C. Macdiarmid, Samuel Smyth, W. H. Summerskill, and F. O. Walker.

The Theodore Williams scholarship in anatomy has been awarded to D. Whitteridge. The board of management have recommended that the Theodore Williams scholarship in pathology shall be divided equally between J. C. Prestwich and R. G. Silver. The Welsh prize for anatomy has not been awarded.

University of Cambridge

At recent examinations the following candidates were successful :—

D.M.R.E.

Part II.—S. S. Alam, F. C. Golding, C. A. Grant, Elizabeth M. Haworth, R. M. Patterson, Mohan Singh, Elizabeth M. F. Taylor, and A. R. Thomas.

University of London

At a meeting of the court on July 12th a resolution was passed conveying cordial thanks to the Rockefeller Foundation for a further generous donation to University College. The Foundation, learning of the difficulties of accommodation experienced by Mr. A. V. Hill, Foulerton professor in physiology, and his research students, have made a grant of £4000 for the reconstruction and equipment of additional laboratories of the department of physiology at the College, to accommodate expansion of Prof. Hill's work in biophysics.

The court learnt with gratification of grants made by seven more of the City Companies — viz., the Coopers, Cooks, Curriers, Fanmakers, Frame-work Knitters, Gardeners, and Tin Plate Workers—towards the ceremonial hall to be built on the University's new site in Bloomsbury. Thanks were also conveyed to Mr. A. Horace Bird, clerk to the Tylers and Bricklayers' Company, for a personal gift for the same purpose, and to the Public Trustee for a grant from the John William Berry bequest.

At recent examinations the following candidates were successful :—

D.P.H.

R. J. I. Bell, W. L. Blakemore, H. G. H. Butcher, C. E. Caudwell, R. C. Cohen, J. G. Currid, P. G. Currid, Hilda M. Davis, A. N. de Quadros, J. D. Dimock, J. C. St. G. Earl, C. L. S. Ferdinands, N. M. Goodman, *J. M. Henderson, R. S. Johnston, James Kemp, Laura H. Macfarlane, N. M. Mian, Niaz-ud-Din, B. C. Nicholson, *Brian O'Brien, T. B. Pahlajani, G. H. G. Southwell-Sander, J. M. Talati, A. J. Teal, Kathleen C. Vost, and G. A. Wilson.

Part I.—O. M. Akbani, A. S. Arora, Ram Dyal, Désirée M. B. Gross, and Mary S. Stuart.

* Awarded a mark of distinction.

DIPLOMA IN PSYCHOLOGY

H. A. Fountain, Gertrude V. Gaetjens, Enid Hurst, Sophia Lauterbach, A. F. Mohun, Phyllis D. Short, Eva Sogno, and Edith B. Warr.

Part I.—Norman Crawford and Beryl E. Dunstan.

DIPLOMA IN BACTERIOLOGY

J. C. Cruickshank, Averil W. Greener, E. H. Hopkins, Thomas McClurkin, Ganapati Panja, A. E. Platt, and Helen M. Russell.

University of Liverpool

At recent examinations the following candidates were successful :—

M.B., CH.B.

First-class Honours.—J. D. Hay.

Second-class Honours.—Freda B. Bannister, G. Cornah, S. Henderson, and C. H. Stewart-Hess.

Pass degree (1924 Regulations).—D. W. Bailey, R. T. Bowes, Clara Burgess, J. M. Edwards, J. G. Hailwood, W. S. Heath, Nancy A. Holt, D. J. Hoskinson, R. A. Hughes, W. R. Hunter, H. B. N. Jennings, W. N. M. Mason, E. T. Owen, S. Papperovitch, F. Pygott, R. G. Reid, Enid Richards, Estelle E. Roskin, T. Seager, G. M. Sleggs, C. W. Warner, and C. R. Wright.

Considerable extensions to the departments of histology, physiology, pathology, and biochemistry are being carried out. The north wing of the Thompson Yates laboratories is being widened and an extra floor is being added. A portion of the Johnston laboratory will then become available for the department of biochemistry and the removal of the medical library will be avoided.

Queen's University of Belfast

At recent examinations the following candidates were successful :—

M.D.

J. H. Gillespie, T. B. H. Haslett, R. W. M. Strain, R. J. W. Withers, I. H. McCaw, J. Boyd, C. W. Kidd, F. E. B. Manning, A. R. Martin, and D. Sinton.

M.B., B.CH., B.A.O.

Second-class Honours.—S. D. Donnan, Robert Glenn, S. W. Liggett, E. W. M'Mechan, and D. C. Porter.

Pass.—D. H. Anderson, J. R. Armstrong, J. K. Armstrong, W. G. A. Bingham, J. C. Bowe, Thomas Boyd, Mary C. Chambers, Mary J. T. Darby, William Dornan, S. L. W. Erskine, J. H. Green, T. R. Haire, William Hanna, J. D. Hardy, Edwin Henderson, B. J. Henry, B. R. Henry, R. W. Hewitt, Winifred M. Jackson, A. Johnson, H. C. A. Johnston, J. H. Kyle, G. P. MacCarthy, J. K. M'Collum, C. A. M'Comiskey, R. F. M'Keown, Andrew M'Quiston, F. V. Maclaine, W. N. Martin, W. A. H. Mitchell, Gertrude E. Moffett, L. C. Montgomery, J. C. Nicholson, J. M. O'Kane, J. W. Orr, A. S. Patterson, Anne C. Robertson, S. A. Vincent, D. W. Wallace, and C. G. Warnock.

Royal College of Surgeons of England

A quarterly meeting of the council was held on July 13th. Sir Holburt Waring, the president, announced the re-election of Prof. A. H. Burgess, and the election of Sir Charles Gordon-Watson, Mr. R. C. Elmslie, Mr. L. R. Braithwaite, and Mr. H. S. Souttar, as members of the council. Sir Holburt Waring was re-elected president, and Prof. G. E. Gask and Mr. Wilfred Trotter were elected vice-presidents. Dr. Edward L. Keyes, professor of urology in the Cornell University, New York, and Dr. G. Nové-Josserand, professor of orthopædics in the University of Lyons, were elected honorary Fellows of the College.

Sir Arthur Keith has retired from the post of conservator of the museum, and Mr. R. H. Burne, the physiological curator, who has been acting conservator for the past nine months, will retire when a new conservator comes into office. Miss M. L. Tildesley was reappointed curator of the department of human osteology; Sir Frank Colyer, honorary curator of the odontological collection; Mr. C. J. S. Thompson, honorary curator of the historical collection; Mr. J. H. Thompson, Bernhard Baron scholar; and Mr. Laurence O'Shaughnessy, college research scholar.

It was reported that the special trustees of the late James Maxwell Grant Prophit had awarded a studentship for cancer research to Prof. Edward Mellanby on the recommendation of the College. The Hallett prize for anatomy and physiology was awarded to David Slome, Cape Town University.

Licences in dental surgery were granted to the following :—

Harry Ackers, G. R. Attkins, P. B. Blaiberg, N. A. Borland, C. R. Boucher, F. H. Crabb, O. P. O. Cross, J. W. Dix, William Eve, Leslie Everest, R. E. C. Farrant, Stanley Ford, C. A. Gear-Evans, F. W. Goodall, C. H. Grimshaw, Hamie Hack, O. F. Harley, A. E. Hawkins, R. G. V. Houlson, R. A. Johnson, S. W. Kemp, K. E. Lawrence, L. G. Lyle, W. E. Morton, M. Porter, H. P. Rees, J. D. Rees, E. W. R. Sattin, T. T. Schofield, M. H. J. Simpson, L. B. Somerville-Woodiwis, J. G. Spiller, Elizabeth M. Stewart, F. W. Sturgess, H. A. Thompson, N. E. B. Tinley, B. G. F. Turner, J. G. van Schalkwijk, W. E. Waite, S. R. Wallis, H. C. Walsham, Theodore Weiner, H. W. Westoby, K. J. Whitten, D. M. Wilson, and C. R. Wolfendale.

Diplomas were granted jointly with the Royal College of Physicians as follows :—

D.P.H.—A. L. Banks, Kathleen F. Butterfield, Evelyn M. Davies, F. M. Day, Thomas Evans, Beryl M. Furlong, J. A. Galletly, Sibyl D. Goodwill, D. R. C. Grey, G. E. Harries, Phyllis N. Hooper, C. K. Lakshmanan, J. G. S. McQueen, Philip Morton, and J. M. Vine.

D.T.M. & H.—C. E. Bevan, B. B. Bose, Rachel P. Carr, D. N. Chakravarti, A. B. Cook, Maurice Ellis, J. H. S. Gear, J. A. S. Goonawardena, W. H. Greany, C. E. Gunatilleke, D. J. T. Leanagé, V. S. Majmudar, H. S. Patel, and J. H. Stickler.

D.P.M.—H. McI. Birch, C. R. Birnie, Doris E. Bunbury, G. H. Davy, M. M. Deane, H. R. Ferguson, R. C. Forrester, R. S. Kennedy, Annie M. McGrath, F. J. Napier, J. N. Warren, and J. F. Wilde.

D.L.O.—Barbara M. L. Abercromby, D. W. Ashcroft, W. H. Bradbeer, K. K. Ghosh, R. W. Higgins, V. R. Kamath, H. D. B. Kelly, F. J. G. Lishman, A. F. Mohamed, D. G. Perrett, and Abdul Rashid.

D.O.M.S.—G. J. Ahern, K. L. B. D. Bhiwapurkar, Alison M. Collie, J. A. Corkey, Hofmeyr de Villiers, R. J. L. Fraser, Adelaide G. Gault, M. W. Joseph, Pah-Chien Kwan, D. C.

MacDiarmid, Fawzy Messiha, J. C. Neely, P. A. V. Pillai, Campbell Shaw, and Samuel Smyth.

D.M.R.E.—C. D. Costello, R. I. Roberts, and H. E. P. Yorke.

The following professors, lecturers, and demonstrators were appointed for the ensuing year: *Hunterian Professors:* Prof. W. E. Le Gros Clark, two lectures on the evolutionary origin of the primates; Mr. C. P. G. Wakeley, one lecture on the surgery of the pineal gland; Mr. L. R. Broster, one lecture on the surgery of the adrenal; Mr. H. C. Edwards, one lecture on diverticula of the duodenum and ileum, and one lecture on diverticula of the colon and vermiform appendix; Mr. R. A. Brews, one lecture on a clinical research on the radium treatment of carcinoma of the cervix uteri; Mr. Arnold Sorsby, one lecture on retinal abiotrophy; Mr. K. H. Watkins, one lecture on the bladder function in low spinal injury; Mr. E. G. Muir, one lecture on carcinoma of the prostate; Mr. A. A. Davis, one lecture on the presacral nerve, its anatomy, physiology, pathology, and surgery; and Mr. J. M. Yoffey, one lecture on the study of lymphoid tissue. *Arris and Gale Lecturers:* Sir Thomas Dunhill, one lecture on diaphragmatic hernia; Mr. C. B. Henry, one lecture on aberrant third molars and their menace; Mr. Denis Browne, one lecture on talipes equino-varus. *Erasmus Wilson Lecturers:* Mr. R. Davies-Colley and Mr. C. E. Shattock. *Arnott Demonstrator:* Mr. C. P. G. Wakeley.

University of Sheffield

Dr. Lewis B. Winter has been appointed lecturer in physiology.

University of Edinburgh

Among those who will receive honorary degrees on the occasion of the celebration of the 350th anniversary of the foundation of the university in October are Mr. John W. Dowden and Dr. Robert Thin, presidents of the two Royal Colleges of Edinburgh, Sir Ewen Maclean, Sir Frederick Kay Menzies, and Sir Edward Sharpey-Schafer.

University of Manchester

Dr. Frank Clare Wilkinson, at present professor of dental science in the University of Melbourne, has been appointed to the chair of dental surgery and the directorship of the Dental Hospital of the University.

Prof. Wilkinson graduated as B.D.S. at Liverpool in 1912 and as M.B. in 1915. At the university he was captain of the university Rugby football team. After service in France with the Royal Army Medical Corps he returned to the pathological laboratory as a research student, having obtained the degree of M.D. in 1917. He was appointed professor of dental science at Melbourne, and principal of the Australian College of Dentistry in 1924. In 1925 he became dean of the faculty of dental science in that university, and in 1926 director of the dental research department.

Dr. Eugenia R. A. Cooper, Dr. E. Falkner Hill, Dr. Walter Schlapp, and Mr. Harry Platt have been appointed members of the board of the faculty of medicine. Miss Margaret M. Ferguson, M.B., has been appointed demonstrator in anatomy.

Harveian Society of London

On Saturday last this society made an expedition to Downe, in Kent, where members were received by Sir Buckston Browne and shown over Darwin's old home. Purchased by Sir Buckston and presented to the British Association, it is now kept as a memorial to Darwin, and is open to visitors both on Sundays and weekdays. From Down House it proved to be only a short walk, through gardens and rain, to the new research farm of the Royal College of Surgeons (see p. 204), where there were raspberries-and-cream and scientific demonstrations. Here Lieut.-Colonel E. L. Gowland, as president, expressed the thanks of the society to Sir Buckston for his generous benefactions and presented him with a very large garden seat as a small mark of appreciation. The recipient, in returning thanks, gave a surprising account of the evolution of seats in general, and invited Sir Arthur Keith to confirm or refute it. But Sir Arthur refused to compete.

Medical Society of Individual Psychology

The annual general meeting of this society was held at the Florence Restaurant, London, on July 13th. Dr. J. C. Young was elected chairman, and Prof. W. Langdon Brown vice-chairman for the ensuing season, with Dr. F. G. Crookshank as secretary and editor, Dr. H. C. Squires as treasurer, and Dr. F. Marjorie Edwards, Dr. M. Marcus (assistant editor), Dr. Mary B. Ferguson, Dr. O. H. Woodcock, and Dr. Bevan Brown as members of committee. Dr. Crookshank said that the number of subscribing members and associates was now 114, and the history of the society showed consistent progress. The opening meeting of the next session will be held on Oct. 12th, but Dr. Adler may visit England before this and deliver an address. Communications should be made to Dr. Crookshank at 57a, Wimpole-street, W.1.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Mental Hospital.—Jun. Asst. Physician. £300.
Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.
Barry U.D.C. Surgical Hospital.—H.S. At rate of £200.
Bath, Royal United Hospital.—H.P. At rate of £175.
Birmingham and Midland Eye Hospital, Church-street.—H.S. £130–£150.
Blackburn Royal Infirmary.—Res. H.P. £175. Also Fourth H.S. £150.
Bournemouth, Royal Victoria and West Hants Hospital.—H.S.'s, and Cas. O. Each at rate of £120.
Bradford City Sanatorium, Grassington.—H.P. £175.
Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £135.
Bristol Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. Each at rate of £60. Also Cas. O. At rate of £100.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £150.
Gloucester Royal Infirmary and Eye Institution.—H.S. At rate of £150.
Gravesend and North Kent Hospital.—Two H.S.'s. Each £125.
Great Yarmouth General Hospital.—H.S. £140.
Guildford, Royal Surrey County Hospital.—Visiting Anæsthetist. £150.
Hastings, Royal East Sussex Hospital.—Sen. and Jun. H.S.'s At rate of £200 and £150 respectively.
Hertford County Hospital.—H.P. At rate of £150.
Huddersfield, West Riding Mental Hospital, Storthes Hall, Kirkburton.—Asst. M.O. £350.
Lambeth Hospital, Brook-street, Kennington, S.E.—Temporary Res. Asst. M.O. At rate of £250.
Leeds University.—Lecturer in Physiology. £500.
Liverpool, Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £125.
Liverpool Heart Hospital.—Asst. Physician. £200.
Liverpool Open-air Hospital for Children, Leasowe.—Jun. Res. M.O. £200.
Liverpool Royal Children's Hospital, Myrtle-street.—Res. Cas. O. £250.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.
Manchester, Ancoats Hospital.—H.P. and H.S. Each at rate of £100.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £500.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Registrar to Orthopædic Dept. £100.
Nottingham General Hospital.—H.S. At rate of £150.
Plymouth City Hospital.—Res. M.O. £350.
Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Royal College of Surgeons of England.—Two Examiners in Dental Surgery.
Ruthin Castle, North Wales.—Jun. Res. Physician. £200.
St. Andrew's Hospital, Devons-road, Bow, E.—Temporary Res. Asst. M.O. At rate of £250.
St. Helens Hospital.—Jun. H.S. £150.
St. John's Hospital, Lewisham, S.E.—Res. H.P., and H.S., and Cas.O. Each £100.
Salford, Hope Hospital, Pendleton.—Asst. Res. M.O. At rate of £200.
Salford, Infectious Diseases Hospital.—Jun. Asst. Res. M.O. £200.
Salisbury, General Infirmary.—H.P. and H.S. Each at rate of £150.
Sheffield, Jessop Hospital for Women.—H.S. At rate of £100.
Shrewsbury, Royal Salop Infirmary.—Res. H.P. At rate of £160.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £150.
Stockport Infirmary.—H.P. £150.
Sudan Medical Service.—M.O. £E.720.
Sunderland Royal Infirmary.—H.S. and H.P. Each £140.
Swanley, Kent, Alexandra Hospital for Children with Hip Disease. Res. Asst. M.O. At rate of £200.
Warrington County Mental Hospital, Winwick.—Asst. M.O. £500.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Res. Jun. H.S. At rate of £100.
Wigan Royal Infirmary.—H.S. £150.
Wolverhampton, Royal Hospital.—H.S. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters-hill, S.E.—Res. M.O. £175.
York County Hospital.—H.S. to Eye, Ear, Nose and Throat Dept. £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Ashby-de-la-Zouch, (Leicester), Barnoldswick (York, West Riding), Newquay, No. 2 (Cornwall), and at Thurso (Caithness).

NOTES, COMMENTS, AND ABSTRACTS

RELICS AT THE COLLEGE OF SURGEONS

THE historical section of the museum of the Royal College of Surgeons of England is growing both in size and interest, and has recently been enlarged by the addition of a new room, in which the collection of mummies and other objects illustrating the preservation of the dead are now exhibited. The original room in which the historical objects were displayed has been redecorated and the collection rearranged so it can now be seen to better advantage.

Among the recent accessions of interest are two bones, humerus and femur, of Queen Berengaria, the wife of Richard I. (Cœur de Lion), who died at L'Espan near Le Mans in 1249. These relics were recently bequeathed to the museum by the late Mr. Garraway Rice, F.S.A., together with some documents supporting their authenticity.

Berengaria was the daughter of Sancho the Strong, King of Navarre, and Richard first met her when she was presiding as queen of love and beauty at a great tournament given by her father in his honour in which he also took part. He fell a victim to her charms and they became secretly engaged, but it was not until 12 years afterwards, when he was crowned King of England in 1189, that he again sought her hand. After undergoing many vicissitudes at sea, she joined Richard in Cyprus, where they were married in 1191. He took his queen with him to Palestine where he continued his crusades and she also shared his fortunes in the Holy Land. Afterwards she followed him through his campaigns in France and was with him when he died.

Though Queen of England, she never set foot in this country, and after Richard's death she founded the convent of L'Espan at Le Mans in Brittany, to which she retired, and remained there until she died in 1249. She was buried in the abbey church attached to the convent and a sculptured effigy was placed on her tomb. In 1819 Mr. Charles Stothard, F.S.A., paid a visit to the church with the object of examining the effigy of Berengaria. He found the place had been converted into a barn and the figure representing the queen removed and concealed under a quantity of corn. It was still in a good state of preservation and was perfect, with the exception of the left arm, which was missing. He subsequently discovered it, together with some bones which had fallen from the tomb. On questioning some men who worked on the place, they told him that the tomb with the figure had formerly stood in the centre of the aisle at the east end of the church. When it had fallen open, there was no coffin in it, but only a small square box which contained some bones, pieces of linen, and stuff embroidered with gold and a piece of inscribed slate. Mr. Stothard traced the possession of the slate to a canon of the church of St. Julien at Le Mans, and found an inscription on it in Latin of which the following is a translation: "The tomb of the most serene Berengaria queen of the Angles the noble founder of this monastery was restored and removed to this more sacred place. In it were deposited the bones which were found in the ancient sepulchre on the 27 May in the year of our Lord 1672."

Mr. Stothard recorded the account of his visit to the tomb in the "Monumental Effigies of Great Britain" in 1876. The tomb was restored and placed in the south transept of Le Mans cathedral, but in 1921 it was removed to the north transept, in order to make room for a monument commemorating the priests of the diocese who had fallen in the late war. The two bones of the queen in the possession of Mr. Stothard, and documented by him in 1819, eventually passed to Mr. R. M. Chart, J.P., and were given by him to Mr. Garraway Rice in 1894.

Such is the history of the bones which are now to be seen in the museum of the Royal College of Surgeons.

An interesting addition to the relics of John Hunter, already in the possession of the College, is a walking stick that belonged to the famous surgeon. It is a dark brown bamboo cane with a narrow silver band and an ebonised crutch handle, which shows evident signs of wear. For many years it was in the possession of the late Mr. W. Morrant Baker, surgeon to St. Bartholomew's Hospital, who died in 1896, and on the death of his widow it has now been presented to the museum by members of the Morrant Baker family.

The gift of a collection of old bullet extractors and forceps that formerly belonged to Mr. A. Wormall, has also been made by Colonel E. M. Cowell, F.R.C.S. This interesting collection has enabled the curator to complete a chronological arrangement of the instruments already in the museum, showing the history of appliances employed to remove musket balls and bullets from the body, dating from the first half of the sixteenth century. They begin with the screw extractor described by Andrea della Croce and called by Ambroise Paré, in 1564, a "tire-fond." Examples of the forceps which superseded the extractor in the seventeenth century follow, such as the "straight crane's bill," used for extracting small shot or pieces of armour and splinters of bone from deep wounds. In the seventeenth and eighteenth centuries many improvements were made in bullet forceps, notably by Savigny, Ruspini, and Luer, while another instrument called a bullet-scoop was invented by Rudtorffer. Other interesting specimens consist of types of the forceps and probes that were used by the British army medical services during the Crimea and Peninsula campaigns.

A valuable addition has been made to the Dudley Buxton collection of anæsthetic apparatus by his son, Dr. St. J. Dudley Buxton, who has presented the museum with Thomas Clover's manuscript notebook, containing his original drawings and studies for the construction of his historic apparatus for the administration of ether, gas, and chloroform, together with a manuscript in Clover's autograph of a paper describing his improved chloroform inhaler.

THE PRINCIPLES OF FRUIT PRESERVATION

A VOLUME by Mr. T. N. Morris on the principles of fruit preservation,[1] one of a series of monographs under the general editorship of Dr. E. Howard Tripp, is the outcome of nine years of research and factory experience, and provides a summary of present knowledge most useful to dietitians.

In a study of the properties of the pectinous substances of plants as described in the literature of the subject since the discovery by Braconnot (1825–30) that pectin was responsible for the formation of jellies when fruits and fruit extracts were boiled, three members of the Cambridge school (W. G. Ogg, M. H. Branfoot, and the late Mrs. M. W. Onslow) have thrown some light on the basic principles of jam-making. It appears that sugar, pectin, and acid are all necessary for the successful gelling of fruit, and further that the strength of the gel is dependent not on the total acidity, but on the pH of the mixture. It is also important not to disturb the sol until it has successfully formed a gel. The optimum pH for jam-making seems to be about 3·1, and although sugar has a considerable effect in retarding the rate of destruction of pectin by heat the general feeling among jam-makers is that the boiling period should be as short as possible—showing the fallacy of long boiling of jam which will not set. The addition of pectin obtained from the "albedo" of lemon peel or from apples is a common expedient of jam-makers to avoid the "runny" jam which is often obtained from fruits of low pectin content.

Cold storage under carefully regulated conditions can be employed as a means of enabling a factory to run continuously, notwithstanding the rapid succes-

[1] Principles of Fruit Preservation. By T. N. Morris, M.A., University of Cambridge and Department of Scientific and Industrial Research, Low Temperature Research Station. London: Chapman and Hall. 1933. Pp. 239. 15s.

sion of ripening of the fruits used for jam. It is interesting to note that the evidence as to the unsuitability of cold storage for preserving jam fruits accepted by the Ministry of Health Committee in 1924 does not hold good to-day, so that the use of sulphurous acid has nothing but cheapness to recommend it. It is unsuitable for canned fruit as it acts upon the tins.

The preservation of fruits by bottling or canning after having been exposed to heat dates from the beginning of last century, but the canning industry, especially as an important one in this country, is of comparatively recent date. Canning seems to be a process requiring much more care and skill than jam-making. The selection of fruit, avoiding all damaged ones, the removal of the skin of larger fruit (peach skin is loosened by digestion in caustic soda), the right strength and proportion of syrup, the filling of the can, leaving the right amount of empty space for accidental dents or the evolution of hydrogen without bulging, all need care and expert supervision.

The temperature of cooking must be sufficiently elevated or long continued for thermophilic bacteria—especially *Bacillus botulinus*—to be killed; this is easier with fruits on account of their high acidity than with vegetables and meat. Interesting data on the relations of hydrion concentration and temperature to the death-rate of this and other organisms are given, and generally Mr. Morris shows what great contributions have been made by the more exact sciences to the canning industry. Cans are made of tinned iron or steel and corrosion problems arising out of the electrolytic action of the two metals are discussed at some length. A useful chapter on the examination of canned fruit closes this section. A chapter heading "The Principles of Dehydration" gives a notion of the strides which have been made in placing the method of preservation of fruits by drying on a quantitative basis.

On the important question of vitamin preservation, vital to the health of mariners and explorers in regions where fresh food is not obtainable, Mr. Morris says, summing up available information, "There are . . . reasonable grounds for asserting that most canned foods should contain more vitamin C than fruit cooked in an open vessel." He does not, however, seem certain that they actually do contain more, and suggests that the introduction of juice from the peelings of apples—the tissues next the peel are richest in vitamin—might be worth considering, since, without such juice much vitamin is lost whatever method of canning is adopted. It is clear that the convenience of using canned fruit should not be given undue weight in planning dietaries, especially for invalids and children.

MEDICAL AUTHORSHIP

A CORRESPONDENT who two years ago signed a contract with a medical publisher to complete a book by October of this year, finds that it is almost impossible to do so, and writes to ask what is his legal position if he fails to deliver the manuscript in time. The answer is that if he has failed to deliver the copy by the agreed date, the publisher will be entitled to bring an action against him for damages, the damages being estimated on the profit lost by the author's failure to keep his part of the bargain. This is not one of those contracts where a court will decree specific performance—i.e., will compel the author to write and produce his manuscript as promised. But the court will enforce a clause in the agreement whereby the author has promised not to write for any other publisher. Naturally publishers, who have to make their own arrangements for the lock-up of capital in a calculated number of books at a time, do all they can to press an author to keep to the agreed programme. In practice legal actions on this particular point are uncommon. Publishers are not unaware that the author is of a less business-like race than themselves. A publisher might occasionally be able to prove substantial damage where the delay has caused him to miss the tide of a popular success, or has landed him in a period of increased costs. Ordinarily he might be disinclined to prove heavy damage which would show how good a bargain he had driven. His damages would of course be diminished, and his desire to exact them would be quietened, if the author produced his manuscript not so very long after the appointed day. Our correspondent must forgive a final word of irritating moralisation if we add that much trouble over this and all other kinds of contracts is avoided if the parties carefully read what they promise to do, and if they appreciate the nature of their undertaking in good time.

MEDICINE IN EAST AFRICA

Dr. J. L. Gilks directed, until lately, the medical and sanitary service of Kenya, and on his retirement he described [1] the evolution of public health in that country during the 24 years of his service there. When he first went there in 1909 everything was in a state of flux; the local medical service had for five years been joined to that of Uganda, with its principal medical officer and laboratory at Nairobi, but communications were then so primitive that contact could not be maintained. Motor-cars were unknown except at Nairobi, where there were three—one of them belonging to the bacteriologist. Other people went about on foot, supplemented by pony, mule, bicycle, or canoe. The total estimates for the medical department amounted only to £23,974; the only reserve hospital provided six beds, and small dispensaries under the charge of sub-assistant surgeons served the more remote centres. Medical officers joined at £400 a year for three years, and the principal medical officer received £700. An improvement in the prospects and conditions of medical officers took place in 1910, and by this time two permanent native hospitals had been erected; the present European hospital at Nairobi had been started, and the mental hospital at Methari was also completed in that year. The native hospital at Nairobi has just opened a fine research department (described in our issue of April 8th, p. 769), but in 1910 it was, according to Dr. Gilks, a dreadful place. The wooden floors were the despair of everyone, and it was almost impossible to keep the place clean. The first European nursing sister appeared in 1921, and struggled with the Augean conditions with great detriment to her own health. It was no uncommon thing to see an acutely ill patient wandering about the bazaar, where most of them seemed to spend the greater part of their time. Once a man was brought back protesting the day after an operation for double hernia. The retrenchments of 1922 had the effect of bringing about amalgamation of the Civil Hospital and the King's African Rifles Hospital, and during the war the hospital, with the aid of marquees, accommodated as many as a hundred patients.

Public health work in the early days was almost unknown outside the individual efforts of pioneers, but in 1913 a principal sanitation officer was appointed. The whole staff was employed on military work from 1914 to 1916 and much reorganisation was necessary when the staff became available for civil duty again at the end of the war. Even up to 1921 public health legislation only existed in the form of township rules and special ordinances relating to special diseases. A codification was introduced into the Legislative Council but was quite inadequate, and instead of it the South African ordinance was hurriedly but efficiently adapted to local conditions. One of its main features was the responsibility placed on administrative officers for public health, instead of leaving all such problems as mosquitoes and tsetse flies exclusively to the doctors. The new principle was received with astonishment and incredulity in many quarters, but Dr. Gilks thinks that on the whole administrative officers have appreciated the importance of their new responsibilities.

[1] East African Med. Jour., 1933, x., 340.

MAN AND METALS

IT is only by reading such a book as Sollas's "Ancient Hunters" that we in this twentieth century can form even the vaguest picture of what life would be without metals, although those who have passed middle age can remember a time when aluminium, nickel, chromium, manganese, cobalt, tungsten, and cadmium at least were not used in industry. The more common precious metals, gold and silver, were known about 3000 years before the Christian era. Being found native, their beauty, rarity, and permanence gave them value, which was enhanced by the ease with which they could be fashioned. The discovery of the base metals which must be won from their ores by smelting was no doubt accidental, and F. E. Studt, who found, in the Belgian Congo, beads of melted copper in the camp fires of natives who had used lumps of ore as hearth stones, deduces therefrom that "We are warranted therefore in concluding that in a copper region such an accident could happen sufficiently often to give primitive man the hint required to connect the idea of heat with the idea of fusibility." From such beginnings the great metal industry has sprung and those who would know more of the present position of metals with regard to human activity, and of the steps leading to that position, should read the exposition given by Sir Harold Hartley, professor of metallurgy in the Royal School of Mines, recently delivered as the first research and development lecture of the British Science Guild (from the offices of the Guild, 6, John-street, London, W.2., 1s.).

THE COLONATOR.—Although colonic therapy may be held to have an established place amongst modern therapeutic measures, its value has in the past been limited by the fact that it is not always available in general practice. An appliance named the Colonator has recently been put on the market by the Colonator Co., 197, Bath-street, Glasgow, W.2, which should help towards removing this difficulty. It consists essentially in a square rubber bag, of the hot-water bottle type, in which the irrigating solution is contained, and which is connected with the anal nozzle by rubber tubing, the flow being controlled by means of two ebonite taps. An assortment of minor fitments, including a vaginal nozzle and a tube of lubricant, is also provided, the complete apparatus being contained in a neat black attaché case which is readily portable.

"A VISIT TO THE BEMAX FACTORY."—Prof. J. C. Drummond writes: "May I be permitted to correct the report which appeared in your issue of July 8th of the remarks which I made on the occasion of the visit of the members of the council of the Metropolitan Branch of the Society of Medical Officers of Health to the factory where Bemax is manufactured. I stated that through the kindness of H.M. Prison Commissioners I had been enabled to obtain very valuable information concerning diets of the prisoners in the eighteenth and early nineteenth century. This information enabled me to form an opinion regarding the diet of the labouring classes in those times, and convinced me that the consumption of a diet consisting very largely of whole-meal bread was far more satisfactory than modern diets with their high content of white flour. The introduction of processes for removing the germ from bread in the second half of last century was, in my opinion, responsible for a steady increase in the incidence of disorders arising from malnutrition. I did not state, as was reported, that there had been an increased incidence of gastro-intestinal diseases in H.M. prisons since the middle of last century."

THE GRENFELL CALENDAR.—We have received an early copy of the Grenfell Calendar for 1934, which is larger and more elaborate than last year; the number of pages has been increased from 12 to 52. The frontispiece is an "oil-facsim." portrait of Sir Wilfred Grenfell from a painting by Bernard Gribble. On each of the pages of the calendar is a reproduction of a photograph of conditions of life or scenery in Labrador, to which crisp quotations from Sir Wilfred Grenfell's writings, including many from his recent book "Forty Years for Labrador," often provide an apposite commentary. The calendar is being sold at 3s. 6d. by the Grenfell Association of Great Britain and Ireland (82, Victoria-street, London, S.W.1), to promote work among the English-speaking fishermen of Labrador and Newfoundland.

THE MEDICAL DIRECTORY.—Messrs. J. and A. Churchill (40, Gloucester-place, London, W.1) write: "To maintain the accuracy of our annual volume we rely upon the return of our schedule which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid, we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification."

BONES.—An executor asks: "I have the disposition of certain human bones. I can, of course, bury them, but would it be of service to any medical student to despatch them to him? The collection comprises a large part of the human skeleton."

Appointments

DRUMMOND, J. S., M.B., Ch.B. Glasg., D.P.H., has been appointed Assistant Medical Officer of Health for Bury.

ECKHOFF, N. L., M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to Guy's Hospital.

EVANS, HORACE, M.D., M.R.C.P. Lond., Assistant Director of the Medical Unit, London Hospital.

ORR, J. L., M.B., Ch.B. Glasg., Asst. Surgeon, Royal Cancer Hospital, Glasgow.

London County Council.—The following appointments have been made to general and special hospitals. A.M.O. (I) and A.M.O. (II) indicate assistant medical officers of Grades I and II respectively.

PAGE, E. S., M.B. Camb., F.R.C.S. Eng., Senior A.M.O. (II), St. Mary Abbots.
EALING, MILDRED I., M.D. Leeds, A.M.O. (I), Hackney.
HODGKISS, F., M.B. N.Z., A.M.O. (I), New End.
MACGREGOR, MURDOCH, M.B. Glasg., D.L.O., A.M.O. (I), Park.

Certifying Surgeons under the Factory and Workshop Acts: FRIDTHON, M. H., M.B., B.Ch. Dub. (Kingston, Surrey); and HUTCHISON, J. S., M.B., Ch.B. Aberd. (Staveley, Derby).

Births, Marriages, and Deaths

BIRTHS

MILL.—On July 11th, at Welbeck-street, W., the wife of W. A. Mill, M.S., F.R.C.S., of a son.

RICE.—On July 9th, at Thorpe-road, Norwich, the wife of Dr Raymond Rice—of a son.

DEATHS

ABRAM.—On July 13th, at Stanley-road, Hoylake, Emeritus Professor John Hill Abram, M.D., F.R.C.P., late Honorary Physician, Royal Infirmary.

DOWN.—On July 11th, at Sylvan-avenue, Exeter, Arthur Reed Down, L.R.C.P., aged 69.

GIBBS.—On July 7th, at St. Mawes, Alfred Napier Godby Gibbs, M.R.C.S., L.R.C.P. Lond., Hon. Consulting Surgeon to the Bristol Eye Hospital.

MURTZ.—On July 11th, Anton Peter Murtz, M.B., L.S.A., late of London, at 7, San Remo, Hove, Sussex.

RICHARDS.—On July 13th, at a nursing home at Chiswick, William Hunter Richards, J.P., M.S., F.R.C.S., aged 63.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE ROYAL MASONIC HOSPITAL.—When the King last week opened the new Freemasons' Hospital and Nursing Home at Ravenscourt Park, Hammersmith, he acceded "with great pleasure" to the request that the institution should in future be known as "The Royal Masonic Hospital."